VPDES PERMIT FACT SHEET

This document gives the pertinent information concerning the **reissuance** of the VPDES permit listed below. This permit is being processed as a **minor municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. The discharge results from the operation of a **0.0019 MGD intermittent sand filter system**. This permit action consists of adding an *E. coli* limit, removing the nitrogen and phosphorus monitoring, and revising the special conditions. (SIC Code: 4952)

1. **Facility Name and Address:**
   Callaway Elementary School WWTP
   250 School Service Road
   Rocky Mount, VA 24151
   Location: 8451 Callaway Road, Callaway, Virginia 24067

2. **Permit No: VA0088561** Existing Permit Expiration Date: September 8, 2010

3. **Owner Contact:** Darryl Spencer, Supervisor of Buildings and Grounds, (540) 483-5538, darryl.spencer@frco.k12.va.us

4. **Application Complete Date:** March 11, 2010
   Permit Drafted By: Becky L. France, Environmental Engineer Senior
   Date: May 4, 2010
   DEQ Regional Office: Blue Ridge Regional Office
   Reviewed By: Kip D. Foster, Water Permit Manager
   Reviewer's Signature: _____ Date: 5/4/2010
   Public Comment Period Dates: From 5/28/10 To 6/26/10

5. **Receiving Stream Classification:**

Receiving Stream:	Blackwater River, South Fork (River Mile: 2.35)		
Watershed ID:	VAW-L08R		
River Basin:	Roanoke River		
River Subbasin:	Roanoke River		
Section:	6a		
Class:	III		
Special Standards:	NEW-1		
7-Day, 10-Year Low Flow:	1.49 MGD	7-Day, 10-Year High Flow:	6.63 MGD
1-Day, 10-Year Low Flow:	1.25 MGD	1-Day, 10-Year High Flow:	5.48 MGD
30-Day, 10-Year Low Flow:	2.55 MGD	30-Day, 10 Year High Flow:	2.55 MGD
30-Day, 5-Year Low Flow:	3.63 MGD	Harmonic Mean Flow:	11.2 MGD
Tidal:	No	303(d) Listed:	Yes

Attachment A contains a copy of the flow frequency determination memorandum.

6. **Operator License Requirements:** None

7. **Reliability Class:** III

8. **Permit Characterization:**

( ) Private ( ) Interim Limits in Other Document
( ) Federal ( ) Possible Interstate Effect
( ) State
(X) POTW
( ) PVOTW

9. **Wastewater Treatment System:** A description of the wastewater treatment system is provided below. See **Attachment B** for the wastewater treatment schematic and **Attachment C** for a copy of the site inspection report. Treatment units associated with the discharge are listed in the table below.

Table I
DISCHARGE DESCRIPTION

Outfall Number	Discharge Source	Treatment (Unit by Unit)	Flow (Design) (MGD)
001	Callaway Elementary School WWTP	grease trap pump station septic tanks (2) dosing chamber distribution box sand filters (3) tablet chlorinator chlorine contact tank tablet dechlorinator	0.0019

A 1,900 gallon sand filter system treats domestic wastewater from Callaway Elementary School. Wastewater from the school (including cafeteria) flows through a grease trap and is then pumped to two septic tanks. Supernatant from the septic tanks flows by way of a 754-gallon dosing chamber to a distribution box and then to one of the three sand filters. The gates from the distribution box are manually moved periodically to rotate the flow between the three sand filters. Underflow from the sand filters is routed through a tablet chlorinator with chlorine contact tank and then through a tablet dechlorinator prior to discharge to the South Fork of the Blackwater River.

10. **Sewage Sludge Use or Disposal:** This facility collects septage in a septic tank. This septage is hauled to a POTW as needed.

11. **Discharge Location Description:** A USGS topographic map which indicates the discharge location, any significant dischargers, any water intakes, and other items of interest is included in **Attachment D**. The latitude and longitude of the discharge is N 37°00'39", E 80°02'53".

Name of Topo: Callaway Number: 080D

12. **Material Storage:** Calcium hypochlorite tablets and sodium sulfite tablets are stored outside in watertight containers.

13. **Ambient Water Quality Information:** Flow frequencies for the receiving stream, receiving stream classification and 303(d) listing information, and ground water data are discussed below.

Flow Frequencies
Flow frequencies were determined from stream measurements taken upstream from the outfall. Reference gauge data upstream from the discharge point were plotted on a regression line and the associated flow frequencies above the discharge point were determined from the graph. **Attachment A** contains a copy of the flow frequency determination memorandum which describes flow calculations.

Receiving Stream Water Quality Data
Data for STORET Station 4AGCR000.01 were collected upstream of the outfall on the South Fork of the Roanoke River at the Route 739 bridge in the Franklin County community of Algoma. The 90th percentile temperature and pH and average hardness used in the antidegradation wasteload allocation spreadsheet were determined from these STORET station data.

Water Use Classification
The Callaway Elementary WWTP discharges into the Upper Blackwater River Watershed described in the 2008 305(b)/303(d) Water Quality Assessment Integrated Report (**Attachment E**). This segment begins at the Route 739 bridge in Algoma and ends just west of the Route 641 bridge where the North and South Forks of the Blackwater River join. The report indicates that this segment is listed as impaired for bacteria and temperature. Agricultural nonpoint source runoff from dairy operations along the stream is listed as the source of the bacterial impairment.

The receiving waters were included in the Upper Roanoke River Subarea Water Quality Management Plan, VR 680-16-02.1, prepared under Section 303(e) of the Clean Water Act. The Plan designates the segment as effluent limited.

14. **Antidegradation Review and Comments:** Tier I _____ Tier II __X__ Tier III _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier II water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier II waters

is not allowed without an evaluation of the economic and social impacts. Tier III water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The South Fork of the Blackwater River is not listed as a public water supply in the segment where the discharge is located. This segment (VAW-HO8R) is listed on Part I of the 303(d) list for exceedances of the bacterial water criteria. In accordance with Guidance Memo 00-2011, bacteria should not be used to determine tier unless there is clear and convincing evidence that the elevated bacteria numbers are due to inadequately disinfected human waste. Excluding fecal coliform, there is no evidence that the receiving stream does not meet or exceed water quality standards. Therefore, this segment of the South Fork of the Blackwater River is classified as a Tier II water, and no significant degradation of existing quality is allowed.

For purposes of aquatic life protection in Tier II waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The antidegradation baselines for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:
"WQS" = Numeric criterion listed in 9 VAC 25-260-00 et seq. for the parameter analyzed
"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

When applied, these "antidegradation baselines" become the new water quality criteria in Tier II waters. Antidegradation baselines have been calculated as described above and included in **Attachment F**.

The Callaway Elementary School WWTP was built in 1963 prior to the antidegradation policy requirements set forth in the Clean Water Act. The antidegradation requirements apply to existing uses attained after November 28, 1975. Therefore, antidegradation baselines only apply if the facility has expanded or significantly increased the discharge. The facility's outfall 001 discharge is existing, and the application does not indicate an expansion or proposed increase in the discharge of pollutants via this outfall. Therefore, the antidegradation baselines do not apply to this permit reissuance. As the facility is not proposing any increase in the loading of any pollutants, the permit limits are in compliance with antidegradation requirements set forth in 9 VAC 25-260-30.

15. **Site Inspection:** Date: 1/28/10 Performed by: Becky L. France
Attachment C contains a copy of the site inspection memorandum. The last compliance inspection was performed on November 16, 2006 by Troy Nipper.

16. **Effluent Screening and Limitation Development:** DEQ Guidance Memo 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq.). Refer to **Attachment F** for the antidegradation wasteload allocation spreadsheet and effluent limit calculations. See **Table II** on page 13 for a summary of limits and monitoring requirements.

A. **Mixing Zone**

Effluent is discharged into the South Fork of the Blackwater River. The Agency mixing zone program, MIXER, was run to determine the percentage of the receiving stream flow that can be used in the antidegradation wasteload allocation calculations. The program indicated that 100 percent of the 1Q10 and 7Q10 may be used for calculating the acute and chronic antidegradation wasteload allocations (AWLAs). A copy of the printout from the MIXER run is included in **Attachment F**.

B. **Effluent Limitations for Conventional Pollutants**

Flow -- The permitted design flow of 0.0019 MGD for this facility is taken from the previous permit and the application for the reissuance. In accordance with the VPDES Permit Manual, flow is to be estimated and reported per discharge day.

pH -- The pH limits of 6.0 S.U. minimum and 9.0 S.U. maximum have been continued from the previous permit. These limits are based upon the water quality criteria in 9 VAC 25-260-50 for Class IV receiving waters and are in accordance with federal technology-based guidelines, 40 CFR Part 133, for secondary treatment. Grab samples shall continue to be collected once per discharge day.

Total Suspended Solids (TSS) -- TSS limits of 30 mg/L (210 g/d) for monthly average and 45 mg/L (320 g/d) weekly average are based upon technology-based requirements for municipal dischargers with secondary treatment required in accordance with 40 CFR Part 133 and have been continued from the previous permit. Grab samples shall continue to be collected once per discharge month.

Biochemical Oxygen Demand (BOD_5) -- The BOD_5 limits of 30 mg/L monthly average (210 g/day) and 45 mg/L (320 g/day) weekly average have been continued from the previous permit. These limits are technology-based requirements for dischargers with secondary treatment required in accordance with 40 CFR Part 133. Grab samples shall continue to be collected once per discharge month.

In a previous reissuance the regional dissolved oxygen model program was run based on a revised 7Q10 flow of 1.49 MGD and a 90th percentile water temperature of 23.3 °C. The

effluent characteristic input values used were a carbonaceous BOD_5 of 25 mg/L (comparable to a BOD_5 of 30 mg/L), Total Kjeldahl Nitrogen (TKN) of 20 mg/L, and dissolved oxygen (DO) of 0 mg/L, as conservative effluent values. The model predicted little impact on the instream DO levels by the discharge, with values well above the water quality criterion for DO of 5.0 mg/L, within the 0.26 mile modeled segment.
For this permit, the receiving stream has a 90th percentile water temperature of 20.8 °C a and a 7Q10 of 1.49 MGD, so the model run parameters were more conservative and another model run with the revised parameters is not necessary. Refer to **Attachment G** for a copy of the model printout.

Oil and Grease -- During the permit term one of the data points significantly exceeded the oil and grease limit of 15 mg/L. The technology-based limit of 15 mg/L weekly average has been continued from the previous permit. Oil and grease shall continue to be monitored once per discharge month via grab samples.

Total Phosphorus, Total Nitrogen -- In accordance with the revised Water Quality Standards (9 VAC 25-260-00 et seq.) adopted by the Board in December 1997, this discharge is into a stream segment that has been classified as nutrient enriched. The receiving stream is a tributary to the Roanoke River and thus, Smith Mountain Lake. The Policy on Nutrient Enriched Water (9 VAC 25-40-10 et seq.) requires effluent limitations on total phosphorus for all discharges permitted after July 1, 1988, with a flow greater than 0.05 MGD. The permit for Callaway Elementary School WWTP was issued after this date, but has a design flow of 0.0019 MGD, so no permit limitations have been imposed.

The Nutrient Enriched Policy also allows for the implementation of monitoring requirements if it has been determined that there is the potential to discharge a monthly average total phosphorus concentration greater than or equal to 2 mg/L or monthly average total nitrogen concentration greater than or equal to 10 mg/L.

The permittee has collected 55 months of data for total phosphorus and total nitrogen. A summary of the nutrient data is included in **Attachment F**. No additional phosphorus monitoring will be required with this reissuance.

C. Effluent Limitations for Toxic Pollutants

Ammonia as N -- The need for an ammonia limit has been reevaluated using revised water quality criteria and flows. The acute water quality criteria and wasteload allocations were calculated and are included in the spreadsheet in **Attachment F**. Since the facility discharges intermittently, only the acute wasteload allocation was input into the Agency's STATS program to determine if a limit is needed. As recommended in Guidance Memo 00-2011, a default ammonia concentration of 9 mg/L was input into the program. The program output indicates that a permit limit is not necessary for ammonia **(Attachment F).**

E. coli -- A bacteria TMDL for the South Fork of the Blackwater River watershed allocates a fecal coliform wasteload allocation (2.80E+09 cfu/year) that is derived from a bacteria water quality criterion. This allocation was derived by multiplying the design flow (0.0019 MGD) by the bacteria water quality standards (200 cfu/100 mL) for fecal coliform. The TMDL report indicates that a fecal coliform limit of 200 cfu/100 mL will ensure compliance with the bacteria TMDL for the discharge. Refer to **Attachment E** for information from the bacteria TMDL report.

The VPDES Permit Manual recommends that bacteria limits be given as *E. coli*. In accordance with the VPDES Permit Manual, a monthly geometric average limit of 126 cfu/100 mL for *E. coli* has been added to the permit. This limit is expected to be protective of the TMDL which is based upon fecal coliform. Monitoring once per discharge week shall be via grab samples.

Total Residual Chlorine (TRC) -- As noted in Guidance Memo 00-2011, all chlorinated effluent must have a chlorine limit because there is a reasonable potential for the facility to cause or contribute to a violation of the standards. This Guidance Memo also recommends an upper, technology based wasteload allocation of 4.0 mg/L where the chlorine limit, based solely on dilution, would be excessive. The effluent limits are technology based limits. The previous permit limits of 2.0 mg/L monthly average and 2.4 mg/L weekly average have been continued. The limits were calculated by entering an acute WLA of 4.0 mg/L into the STATS program. The program used 4.0 mg/L wasteload allocations as the 97th percentile distribution that must be attained. Monitoring shall be continued once per discharge day using grab samples. Refer to **Attachment F** for a copy of the STATS program output.

17. **Basis for Sludge Use and Disposal Requirements:** Since the facility proposes to pump and haul septage to a POTW, there are no sludge limits or monitoring requirements.

18. **Antibacksliding Statement:** Since there are no limitations less stringent than the previous permit, the permit limits comply with the antibacksliding requirements of 9 VAC 25-31-220 L of the VPDES Permit Regulation.

19. **Compliance Schedules:** There are no compliance schedules included in this permit.

20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

A. **Additional Total Residual Chlorine (TRC) Limitations and Monitoring Requirements (Part I.B)**

Rationale: This condition requires that the permittee monitor the TRC concentration after chlorine contact. In accordance with 40 CFR 122.41(e), permittees are required, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This condition is required by Sewerage Collection and

Treatment Regulations, 9 VAC 25-790, bacteria standards. These requirements ensure proper operation of chlorination equipment to maintain adequate disinfection.

B. **Compliance Reporting under Part I.A and Part I.B (Part I.C.1)**

Rationale: In accordance with VPDES Permit Regulation, 9 VAC 25-31-190 J4 and 220 I, DEQ is authorized to establish monitoring methods and procedures to compile and analyze data on water quality, as per 40 CFR Part 130, Water Quality Planning and Management, Subpart 130.4. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

C. **95% Capacity Reopener (Part I.C.2)**

Rationale: This condition requires that the permittee address problems resulting from high influent flows, in a timely fashion, to avoid non-compliance and water quality problems from plant overloading. This requirement is contained in 9 VAC 25-31-200 B4 of the VPDES Permit Regulations.

D. **CTC, CTO Requirement (Part I.C.3)**

Rationale: This condition is required by Code of Virginia § 62.1-44.19 and the Sewage Collection and Treatment Regulations, 9 VAC 25-790.

E. **Operation and Maintenance Manual Requirement (Part I.C.4)**

Rationale: Submittal of the Manual to DEQ for approval is required by the Code of Virginia Section § 62.1-44.19; the Sewage Collection and Treatment Regulations, 9 VAC 25-790; and the VPDES Permit Regulation, 9 VAC 25-31-190 E, to provide an opportunity for review of current and proposed operations of the facility. Within 90 days from the effective date of the permit, the permittee is required to either submit an updated Manual or notify DEQ that the Manual remains accurate.

F. **Reliability Class (Part I.C.5)**

Rationale: Reliability class designations are required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal and domestic sewage facilities. Facilities are required to achieve a certain level of reliability to protect water quality and public health in the event of component or system failure. A Reliability Class III has been assigned to this facility.

G. **Sludge Reopener (Part I.C.6)**

Rationale: This condition is required by VPDES Permit Regulation, 9 VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage to allow incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Clean Water Act.

H. **Nutrient Enriched Waters Reopener (Part I.C.7)**

Rationale: Policy for Nutrient Enriched Waters, 9 VAC 25-40-10 et seq. allows reopening of permits for discharges into waters designed as nutrient enriched if total phosphorus or total nitrogen in a discharge potentially exceed specified concentrations. The policy anticipates that future nutrient limits may be needed to control aquatic plants.

I. **Treatment Works Closure Plan (Part I.C.8)**

Rationale: In accordance with State Water Control Law § 62.1-44.19, this condition is used to notify the owner of the need for a closure plan if a treatment works is being replaced or is expected to close.

J. **Total Maximum Daily Load (TMDL) Reopener (Part I.C.9)**

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

K. **Conditions Applicable to All VPDES Permits (Part II)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. **Changes to the Permit:**

A. **Special conditions that have been modified from the previous permit are listed below: (The referenced permit sections are for the new permit.)**

1. The Additional Total Residual Chlorine (TRC) Limitations and Monitoring Requirements Special Condition (Part I.A) has been revised in accordance with the VPDES Permit Manual.

2. The Compliance Reporting under Part I.A and Part I.B Special Condition (Part I.C.1) has been revised to include information about significant figures.

3. In accordance with the VPDES Permit Manual, the CTC, CTO Requirement Special Condition (Part I.C.3) has been revised to reflect differences in funding of projects.

4. The Operations and Maintenance Manual Special Condition (Part I.C.4) has been revised in accordance with the VPDES Permit Manual.

B. **A new special condition added to the permit is listed below:**

As required by the VPDES Permit Manual for all facilities treating domestic sewage, a Sludge Reopener Special Condition has been added as Part I.C.6.

C. **Permit Limits and Monitoring Requirements:** See Table III on page 15 for details on changes to the effluent limits and monitoring requirements.

22. **Variances/Alternate Limits or Conditions:** No variances or alternate limits or conditions are included in this permit. A waiver was requested to allow that grab samples for TSS and BOD_5 required by the permit, be recorded on the application in lieu of composite samples. This waiver has been granted.

23. **Regulation of Treatment Works Users:** VPDES Permit Regulation 9 VAC 25-31-280 B9 requires that every permit issued to a treatment works owned by a person other than a state or municipality provide an explanation of the Board's decision on the regulation of users. There are no industrial users contributing to the treatment works.

24. **Public Notice Information required by 9 VAC 25-31-280 B:**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Becky L. France at:

Virginia DEQ, Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019
540-562-6700
becky.france.deq.virginia.gov

Persons may comment in writing or by e-mail to the DEQ on the proposed permit action and may request a public hearing during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for the comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are

substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the Blue Ridge Regional Office in Roanoke by appointment. A copy of the public notice is found in **Attachment H**.

25. **303(d) Listed Segments (TMDL):** This facility discharges directly to the South Fork of the Blackwater River. The stream segment receiving the effluent is listed as impaired for fecal coliform on the current 303(d) list. EPA approved the fecal coliform TMDL on February 2, 2001. It contains a wasteload allocation (WLA) for this discharge of (2.80E+09 cfu/year) for fecal coliform. The TMDL report indicates that a fecal coliform limit of 200 cfu/100 mL will ensure compliance with the bacteria TMDL for the discharge. The permit has a limit of 126 cfu/100 mL for *E. coli*, and this limit is more stringent than the fecal coliform value of 200 cfu/100 mL. So the bacteria limit is in compliance with the TMDL wasteload allocation.

26. **Additional Comments:**

A. **Reduced Effluent Monitoring:** In accordance with Guidance Memo 98-2005, all permit applications received after May 4, 1998, are considered for reduction in effluent monitoring frequency. Only facilities having exemplary operations that consistently meet permit requirements may qualify for reduced monitoring. To qualify for consideration of reduced monitoring requirements, the facility should not have been issued any Warning Letters, Notices of Unsatisfactory Laboratory Compliance, Letter of Noncompliance (LON) or Notices of Violation (NOV), or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years.

The facility received a Warning Letter (W2007-11-W-1020) for exceedance of the oil and grease limit in August of 2007. This facility does not meet the criteria discussed above and therefore is not eligible for reduced monitoring.

B. **Previous Board Action:** The facility was issued a Special Order by Consent June 16, 1997. The Consent Order required the installation of chlorination equipment. The requirement of the Consent order was met with the installation of chlorination and dechlorination equipment.

C. **Staff Comments:** The discharge is not specifically addressed in any planning document, but will be included, if applicable, when the plan is updated.

D. **Public Comments:** On June 16, 2010, the Department of Conservation and Recreation's Natural Heritage Program commented that no natural heritage resources have been documented in the project area. No other public comments were received during the comment period. See **Attachment H** for DCR's comments.

E. **Tables:**

Table I	Discharge Description (Page 2)
Table II	Basis for Monitoring Requirements (Page 13)
Table III	Permit Processing Change Sheet (Page 14)

F. **Attachments:**

A. Flow Frequency Memorandum
B. Wastewater Schematic
C. Site Inspection Report
D. USGS Topographic Map .
E. Ambient Water Quality Information
- STORET Data (Station 4-AGCR000.01)
- 1991 Upper Roanoke River Subarea Water Quality Management Plan (Excerpt)
- Final 2008 305(b)/303(d) Water Quality Assessment Integrated Report (Excerpt)
- Fecal Coliform TMDL (Total Maximum Daily Load) Development for South Fork of the Blackwater River (Excerpt)

F. Wasteload and Limit Calculations
- Mixing Zone Calculations (MIXER 2.1)
- Effluent Data (pH, oil and grease, nutrients)
- Antidegradation Wasteload Allocation Spreadsheet
- Wasteload Allocation Spreadsheet
- STATS Program Outputs (ammonia, TRC)

G. Regional Water Quality Model Output
H. Public Notice and Comments
I. EPA Review Checksheet

Table II
BASIS FOR LIMITATIONS – MUNICIPAL

( ) Interim Limitations
(x) Final Limitations

OUTFALL: 001
DESIGN CAPACITY: 0.0019 MGD

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D-Day	Estimate
pH (Standard Units)	1,2	NA	NA	6.0	9.0	1/D-Day	Grab
BOD_5	1	30 mg/L 210 g/d	45 mg/L 320 g/d	NA	NA	1/D-Month	Grab
E. coli	2,4	126 cfu/100 mL	NA	NA	NA	1/D-Week	Grab (between 8n AM and 4 PM)
Total Suspended Solids	1	30 mg/L 210 g/d	45 mg/L 320 g/d	NA	NA	1/D-Month	Grab
Oil and Grease	3	NL mg/L	15 mg/L	NA	NA	1/D-Month	Grab
Total Residual Chlorine	3	2.0 mg/L	2.4 mg/L	NA	NA	1/D-Day	Grab

NA = Not Applicable
NL = No Limitations; monitoring only

1/D-Day = once per day of discharge
1/D-Month = once per discharge month

1/D-Week = once per discharge week

The basis for the limitations codes are:

1. Federal Technology-Based Secondary Treatment Regulation (40 CFR Part 133)
2. Water Quality Criteria
3. Best Professional Judgment
4. Bacteria TMDL Wasteload Allocation (Roanoke River)

Table III
PERMIT PROCESSING CHANGE SHEET

LIMITS AND MONITORING SCHEDULE:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	Total Phosphorus	1/D-Month	NA			Nutrient monitoring was completed in the previous permit term.	4/2/10
001	Total Nitrogen	1/D-Month	NA			Nutrient monitoring was completed in the previous permit term.	4/2/10
001	*E. coli*	NA	1/D-Week	NA	126 cfu/100 mL geometric average	Monitoring added because the facility discharges into a stream segment impaired for bacteria and a wasteload allocation has been assigned to this discharge.	4/2/10

Attachment A

Flow Frequency Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
3019 Peters Creek Road Roanoke, Virginia 24017

SUBJECT: Flow Frequency Determination
Callaway Elementary School WWTP, VA0088561

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior BLF

DATE: April 9, 2010

This memorandum supersedes the March 25, 2005 concerning the subject VPDES permit.

The Callaway Elementary School WWTP discharges to the South Fork of the Blackwater River near Callaway, Virginia. Stream flow frequencies are required at this site to develop effluent limitations for the VPDES permit.

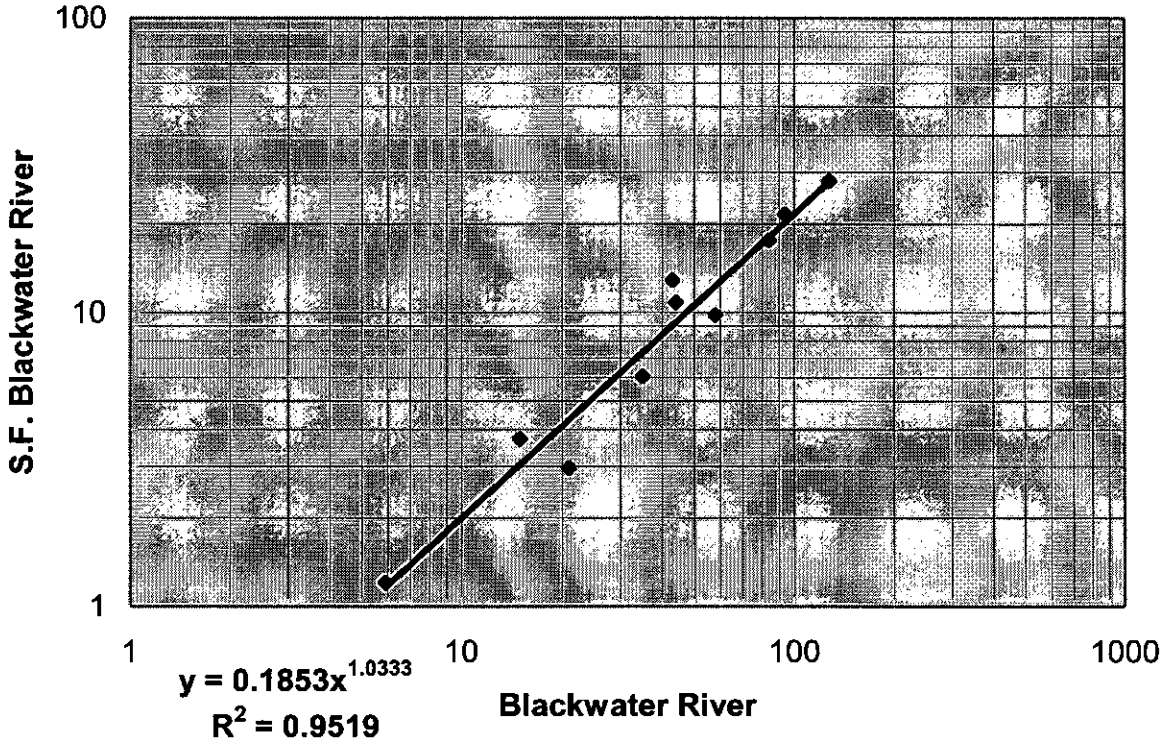
The DEQ conducted several flow measurements on the South Fork of the Blackwater River from 1994 to 1999. The measurements were made above the Callaway Elementary School WWTP outfall. The measurements correlated very well with the same day daily mean values from the continuous record gauge on the Blackwater River at Rocky Mount, VA (#03056900). The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gauge were plugged into the equation for the regression line and the associated flow frequencies at the discharge point were calculated. A spreadsheet and graph of the flow values are attached. The high flow months are January through May. The data for the reference gauge and the discharge point are presented below:

Reference Gauge (data from 1977 to 2003)					
Blackwater River at Rocky Mount, VA (#02056900)					
	Drainage Area [mi^2] =		115 mi^2		
	ft^3/s	MGD		ft^3s	MGD
1Q10 =	8.4	5	High Flow 1Q10 =	32	21
7Q10 =	9.8	6	High Flow 7Q10 =	38	25
30Q5 =	22	14	High Flow 30Q10=	51	33
30Q10=	16	10	HM =	61	39

Flow frequencies for the reissued permit (9/9/10)					
S.F. Blackwater River above Callaway School WWTP(#02056800)					
	Drainage Area [mi^2] =		22.17 mi^2		
	ft^3/s	MGD		ft^3/s	MGD
1Q10 =	1.94	1.25	High Flow 1Q10 =	8.48	5.48
7Q10 =	2.30	1.49	High Flow 7Q10 =	10.25	6.63
30Q5 =	5.61	3.63	High Flow 30Q10	14.19	2.55
30Q10=	3.95	2.55	HM =	17.29	11.2

Flow Data (cfs)

Date	Blackwater	S.F
11/9/1994	58	9.8
11/19/1996	128	28
5/22/1997	94	21.5
6/24/1997	84	17.6
9/17/1997	35	6.07
9/9/1998	21	2.96
5/25/1999	43	12.9
8/17/1999	5.9	1.2
5/8/2001	44	10.8
10/23/2001	15	3.71



Blackwater		Above Outfall	
cfs	Flow Freq	cfs	MGD
8.4	1Q10	1.939	**1.253**
9.8	7Q10	2.299	**1.486**
22	30Q5	5.611	**3.626**
32	HF 1Q10	8.483	**5.482**
38	HF 7Q10	10.254	**6.627**
61	HM	17.286	**11.171**
16	30Q10	3.948	**2.552**
51	HQ 30Q10	14.187	**9.169**
115 mi^2	DA	22.17 mi^2	

Low flow months Jan-May
DA = drainage area

Reference Gauge (data from 1972 to 2003)
Blackwater River at Rocky Mount, VA (#02056900)

Drainage Area [mi^2] = 115 mi^2

	ft^3/s	MGD		ft^3/s	MGD
1Q10 =	8.4	5	High Flow 1Q10 =	32	21
7Q10 =	9.8	6	High Flow 7Q10 =	38	25
30Q5 =	22	14	High Flow 30Q10=	51	33
30Q10=	16	10	HM =	61	39

Flow frequencies for the 9/9/10 reissuance permit
S.F. Blackwater River above Callaway School WWTP(#02056800)

Drainage Area [mi^2] = 22.17 mi^2

	ft^3/s	**MGD**		**ft^3/s**	**MGD**
1Q10 =	**1.94**	**1.25**	**High Flow 1Q10 =**	**8.48**	**5.48**
7Q10 =	**2.30**	**1.49**	**High Flow 7Q10 =**	**10.25**	**6.63**
30Q5 =	**5.61**	**3.63**	**High Flow 30Q10**	**14.19**	**2.55**
30Q10=	**3.95**	**2.55**	**HM =**	**17.29**	**11.17**

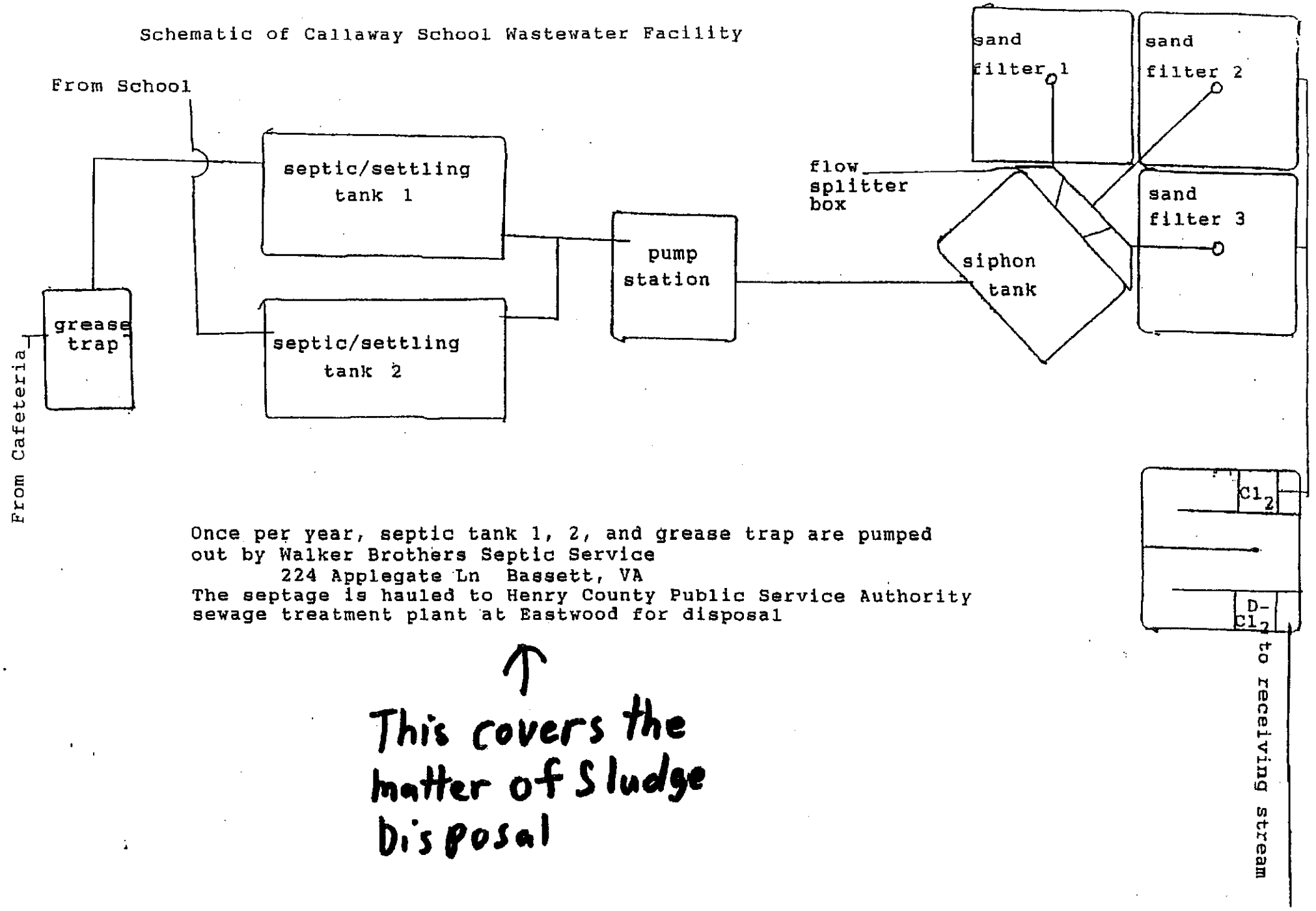
(cfs)

SITEID	NAME	RECORD	River	LATLONG	DAAREA	HARMEAN	HF30Q10	HF7Q10	HF1Q10	Z30Q5	Z30Q10	Z7Q10	Z1Q10	Z1Q30	HFMTHS	Statperiod	Yrstrn
02056900	Blackwater River near Rocky Mount, Va.	R, 1977-	Roanoke River	Lat 37 02'43", Long 79 50'39", NAD 83	115	61	51	38	32	22	16	9.8	8.4	4.6	JAN-MAY	1977-2003	2005

Attachment B

Wastewater Schematic

Schematic of Callaway School Wastewater Facility



Once per year, septic tank 1, 2, and grease trap are pumped out by Walker Brothers Septic Service
224 Applegate Ln Bassett, VA
The septage is hauled to Henry County Public Service Authority sewage treatment plant at Eastwood for disposal

↑

This covers the matter of Sludge Disposal

Attachment C

Site Inspection Report

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office

3019 Peters Creek Road Roanoke, VA 24019

SUBJECT: Site Inspection Report for Callaway Elementary School WWTP
Reissuance of VPDES Permit No. VA0088561

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior BLF

DATE: February 1, 2010

On January 28, 2010, a site inspection was conducted of the wastewater works at Callaway Elementary School. Darryl Spencer, Supervisor of Buildings and Grounds; Roger Houchins, Compliance Coordinator; and Ruthie Dooley, operator, were present at the inspection. The school is located on State Route 641 (Callaway Road) in the community of Callaway. The intermittent sand filter system treats municipal sewage from Callaway Elementary School.

The 1,900 gpd wastewater treatment system consists of a grease trap, two septic tanks, pump station, dosing chamber, distribution box, three sand filters, tablet chlorinator, chlorine contact tank, and tablet dechlorinator. Wastewater from the school (including cafeteria) flows through a grease trap and is then pumped to two septic tanks. Facility staff reported that the grease trap and septic tanks are generally pumped once per year and transported to a wastewater treatment plant.

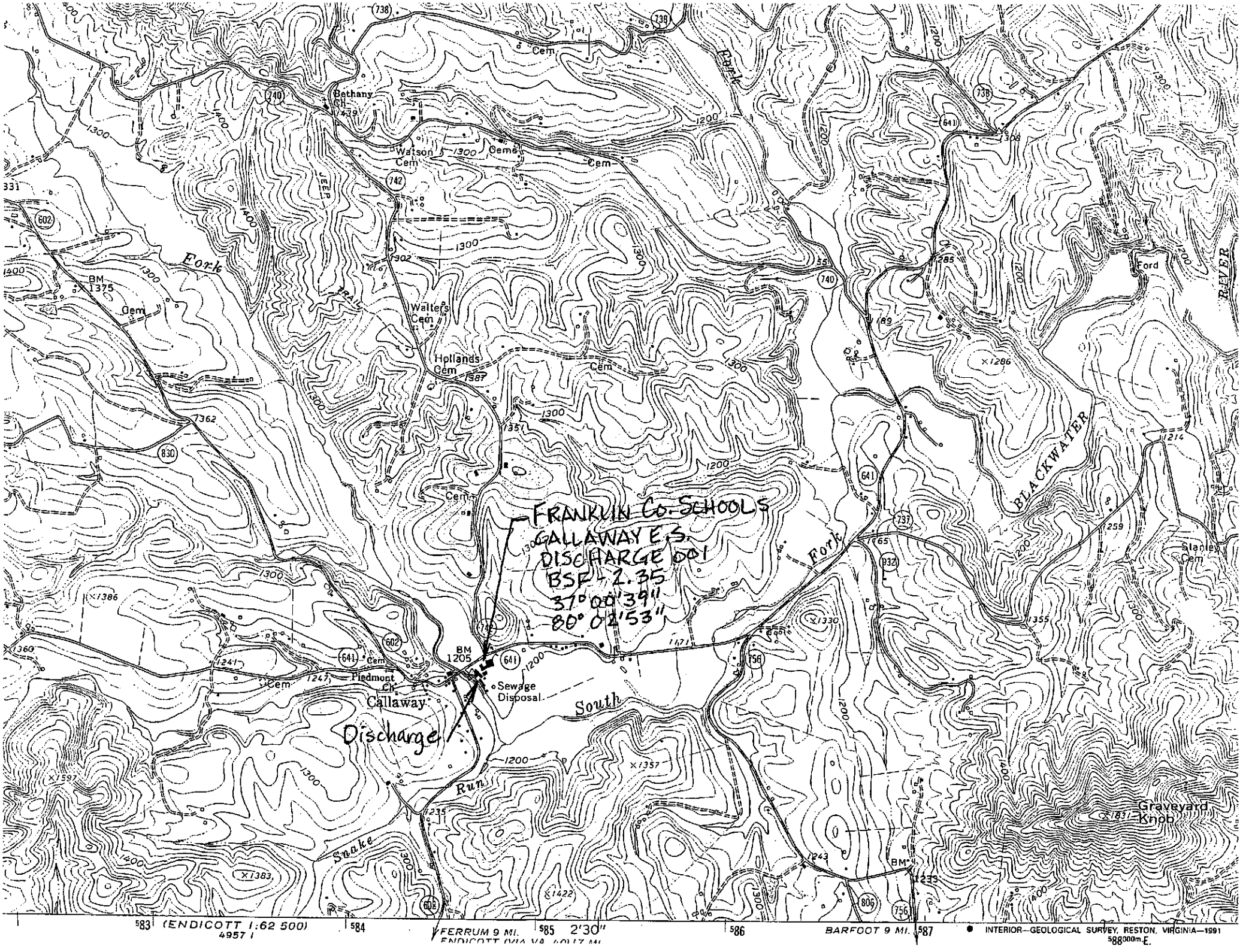
The wastewater from the septic tanks flows into a 754 gallon dosing tank. Once this tank reaches capacity, the wastewater automatically discharges to a distribution box. The distribution box consists of three gates that can be manually moved to control the flow to the sand filters. The gates are moved monthly to rotate the flow between the three sand filters. The flow enters the sand filters through an eight-inch pipe, and is then dispersed onto the sand by a concrete pad. Each filter consists of a 36-inch deep layer of sand over a 12-inch base of gravel over tile. According to Ms. Dooley, the sand filter is raked about every three days. At the time of the site visit, one sand filter was in use and there was no ponding of wastewater on the filter. There was no vegetation on the sand filters not being used.

Sand filter underflow is routed through a tablet chlorinator into the chlorine contact chamber for an hour detention time. One of the two tablet chlorinator tubes was in use at the time of the site visit. Chlorinated effluent then flows through a tablet dechlorinator and is discharged to the South Fork of the Blackwater River. Chlorination and dechlorination tablets are stored in their original buckets on the grating of the contact tank. Flow is estimated from a discharge weir on the end of the tablet dechlorinator.

At the time of the site visit, the discharge appeared clear and there was no evidence of debris at the discharge point. The river flow was running high due to heavy rains a few days ago. The river was between approximately 20 to 25 feet wide and about 2 feet deep. The riverbed contains medium to large rocks. There was no algae or other vegetation observed on the bottom on the river.

Attachment D

USGS Topographic Map


FRANKLIN CO. SCHOOLS
GALLAWAY E.S.
DISCHARGE 001
BSF + 2.35
37° 00' 39"
80° 02' 53"
Discharge
Bethany Ch
Watson Cem
Walters Cem
Hollands Cem
Piedmont Ch
Callaway
Sewage Disposal
BM 1375
BM 1205
Ford
Stanley Cem
Graveyard Knob
Snake Run
South Fork
Fork
Fork
BLACKWATER RIVER
JEEP TRAIL
(ENDICOTT 1:62 500)
FERRUM 9 MI.
BARFOOT 9 MI.
2'30"
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1991

Attachment E

Ambient Water Quality Information

- **STORET Data (Station 4-AGCR000.01)**
- **1991 Upper Roanoke River Subarea Water Quality Management Plan (Excerpt)**
- **Final 2008 305(b)/303(d) Water Quality Assessment Integrated Report (Excerpt)**
- **Fecal coliform TMDL (Total Maximum Daily Load) Development for South Fork of the Blackwater River, Virginia (Excerpt)**

VAW-L08R
STORET Station 4AGCR000.01 (upstream of Callaway Elementary School WWTP)
Rt. 739 bridge at Algoma (Franklin County)

Collection Date Time	Temp Celsius	Field pH (S.U.)
7/11/2001 10:30	22.7	7.9
9/25/2001 11:00	15.2	8.1
11/8/2001 10:00	9.3	7.8
1/7/2002 10:30	4.4	8.3
5/21/2002 9:50	10	8.46
7/24/2002 9:00	20.9	9.14
9/18/2002 9:20	20.8	8.62
11/5/2002 10:05	9.9	7.17
1/22/2003 10:30	1.3	6.98
3/13/2003 13:00	10.9	7.4
5/27/2003 12:30	13.5	7.9
8/2/2005 13:15	21.6	7.4
12/8/2005 11:35	4.5	7.6
2/7/2006 13:00	4.6	7.1
4/20/2006 15:20	19.4	7.2
6/6/2006 12:40	17	7.1
8/2/2006 11:45	22.5	7.2
10/2/2006 14:45	16.5	6.7
12/12/2006 15:00	7.3	7.3
1/10/2007 13:25	5.5	7.2
3/7/2007 12:35	7.9	7.3
5/29/2007 13:30	19	7.3
7/12/2007 12:00	19.2	7.5
9/13/2007 13:00	19	7.4
11/27/2007 13:30	10.4	6.4
1/8/2008 13:10	9.1	7.3
3/11/2008 12:40	8	7.3
5/13/2008 12:50	14.2	NULL
7/8/2008 12:40	18.9	7.5
9/11/2008 14:10	17.6	7.2
11/18/2008 12:40	6.5	7
2/19/2009 12:00	6.2	7.7
4/9/2009 12:55	11.2	7.4
6/4/2009 11:55	16.3	7.5
8/4/2009 12:05	18.5	7.5
10/5/2009 12:15	14.3	7.3
12/15/2009 13:15	10.2	7.2
2/23/2010 14:00	7.8	7.3

90th Percentile Temperature	20.8 °C	
90th Percentile Temperature	16.6 °C	January - May
90th Percentile pH	8.18 S.U.	
10th Percentile pH	7.06 S.U.	

VAW-L08R
STORET Station 4AGCR000.01 (upstream of Callaway Elementary School WWTP)
Rt. 739 bridge at Algoma (Franklin County)

Collection Date Time	Hardness, Total (mg/L as $CaCO_3$)
7/11/2001 10:30	22.1
9/25/2001 11:00	19
11/8/2001 10:00	26
1/7/2002 10:30	15.5
5/21/2002 9:50	24.4
7/24/2002 9:00	22.4
9/18/2002 9:20	52.8
11/5/2002 10:05	31.9
1/22/2003 10:30	15.5
3/13/2003 13:00	17.6
5/27/2003 12:30	12.9

Mean Hardness 23.6 mg/L
(Use 25 mg/L as lowest value valid for wasteload allocation spreadsheet.)

2008 Impaired Waters

Categories 4 and 5 by Impaired Area ID*

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Roanoke and Yadkin River Basins

Cause Group Code: **L08R-02-BAC** **Blackwater River, South Fork**

Location: South Fork Blackwater waters from the Rt. 739 Bridge in Algoma, Va. (Callaway Quad) on downstream just west of the Rt. 641 Bridge where the North and South Forks join forming the Blackwater River.

City / County: Franklin Co.

Use(s): Recreation

Cause(s)* /
VA Category: Escherichia coli/ 4A

The South Fork Blackwater River TMDL Bacteria Study is complete and U.S. EPA approved 2/02/2001. SWCB approved 6/17/2004 [Fed. IDs: 1886 / 7791 / 21330 / 24549]. The Bacteria Implementation Plan is SWCB approved 6/17/2004. The waters are originally 303(d) Listed in 1996 for fecal coliform bacteria (FC) for 6.04 miles.

The Upper Blackwater River Bacteria Implementation Plan is complete as of 8/23/2001 with SWCB approval on 6/17/2004. The TMDL Study identified Wildlife as a major source based on TMDL Bacteria Source Tracking (BST). The Bacteria Implementation Plan encompasses the Upper Blackwater River (L08R), the North and South Forks, Little and Teels Creeks. The entirety of the approved TMDL Study and Implementation Plans can be viewed at http://www.deq.virginia.gov.

The South Fork Blackwater River 1996 303(d) Listed impairment is originally based on a 319 funded special study (SS 925102) data and ambient fecal coliform bacteria sample collections. Abundant fecal coliform bacteria counts failed to support the recreational use by exceedences of both the existing geometric mean (200 cfu/100 ml) and former (2002) instantaneous criterion of 1000 cfu/100 ml. Escherichia coli (E.coli) now replaces fecal coliform as the bacteria indicator in the Blackwater River drainage as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters]. The 6.06 mile bacteria impairment remains.

4ABSF001.15- (Rt. 641 Bridge east of Callaway) E.coli exceed the 235 cfu/100 ml instantaneous criterion in 19 of 27 samples. Excursions range from 420 to greater than 2000 cfu/100 ml. Twenty of 26 samples exceeded the instantaneous criterion in 2006 ranging from 250 to greater than 2000 cfu/100 ml.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-L08R_BSF01A00 / Blackwater River, South Fork Lower / South Fork of the Blackwater River mainstem from the Callaway Community downstream to the South Fork's confluence with the North Fork of the Blackwater River.	4A Escherichia coli	2004	2001	2.23
VAW-L08R_BSF02A00 / Blackwater River, South Fork Upper / South Fork of the Blackwater River mainstem from Algoma, Green Creek mouth, downstream to the Callaway community.	4A Escherichia coli	2004	2001	3.81

Blackwater River, South Fork	Estuary* (Sq. Miles)	Reservoir* (Acres)	River* (Miles)
***Impaired Area ID: VAW-L08R-01 - Recreation**			
Escherichia coli - Total Impaired Size by Water Type:			**6.04**

Sources:

- Livestock (Grazing or Feeding Operations)
- On-site Treatment Systems (Septic Systems and Similar Decencentralized Systems)
- Unspecified Domestic Waste
- Wildlife Other than Waterfowl

*Incorporates only those Cause Group Codes assigned to the Impaired Area ID. Header Infomation: Location, City/County, Cause/VA Category and Narratives describe the total impaired area per Cause Group Code. Sizes may not reflect the entire specific Cause impairment.

2008 Impaired Waters

Categories 4 and 5 by Impaired Area ID*

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Roanoke and Yadkin River Basins

Cause Group Code: **L08R-02-TEMP** **Blackwater River, South Fork**

Location: South Fork Blackwater waters from the Rt. 739 Bridge in Algoma, Va. (Callaway Quad) on downstream just west of the Rt. 641 Bridge where the North and South Forks join forming the Blackwater River.

City / County: Franklin Co.

Use(s): Aquatic Life

Cause(s)* /
VA Category: Temperature, water/ 5C

The Temperature impairment on the South Fork Blackwater River returns with the 2008 IR (see below).

4ABSF001.15- (Rt. 641 Bridge east of Callaway) Three of 26 temperature measurements exceed the Class V Stockable Trout waters criterion of 21 °C. Exceedences occur in the summer months of June and August 2005 (24.1 & 22.4 °Cat) and August 2006 (23.4 °C). The South Fork Blackwater River was delisted in 2004 for temperature but returns with the 2008 Assessment.

2004 Blackwater River, South Fork Delist of 2002 303(d) Temperature Listing (VAW-L08R-02):
The South Fork of the Blackwater River was incorrectly listed in the 2002 Integrated Report. Review of stream gaging data at 02056900 Blackwater River - Rocky Mount, Virginia records the stream flow at less than the 7Q10 of 12 cubic feet per second (cfs). 7Q10 is the lowest stream flow averaged (arithmetic mean) over a period of seven (7) consecutive days that can be statistically expected to occur once every 10 climatic years. A climatic year begins April 1 and ends March 31.
One temperature measurement on August 10, 1999 was collected while daily average stream flow was 10 cfs. The 2002 assessment found excursions of the Water Quality Standards Class V 21 °C temperature criterion in two of 14 measurements taken at 4ABSF001.15 (Rt. 641 Bridge east of Callaway). The exceedences occur on August 10, 1999 and June 27, 2000. 2004 Integrated Report finds no exceedences from 19 temperature measurements. WQS do not apply for dissolved oxygen, temperature or pH when stream flows are less than the 7Q10 [Water Quality Standards 9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***].

Assessment Unit / Water Name / Description	Cause	Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-L08R_BSF01A00 / Blackwater River, South Fork Lower / South Fork of the Blackwater River mainstem from the Callaway Community downstream to the South Fork's confluence with the North Fork of the Blackwater River.	5C	Temperature, water	2008	2020	2.23
VAW-L08R_BSF02A00 / Blackwater River, South Fork Upper / South Fork of the Blackwater River mainstem from Algoma, Green Creek mouth, downstream to the Callaway community.	5C	Temperature, water	2008	2020	3.81

Blackwater River, South Fork	Estuary* (Sq. Miles)	Reservoir* (Acres)	River* (Miles)
***Impaired Area ID: VAW-L08R-01 - Aquatic Life**			
Temperature, water - Total Impaired Size by Water Type:			**6.04**

Sources:

Natural Conditions - Water Quality Standards Use Attainability Analyses Needed	Source Unknown

*Incorporates only those Cause Group Codes assigned to the Impaired Area ID. Header Infomation: Location, City/County, Cause/VA Category and Narratives describe the total impaired area per Cause Group Code. Sizes may not reflect the entire specific Cause impairment.

UPPER ROANOKE RIVER SUBAREA
WATER QUALITY MANAGEMENT PLAN

VR 680-16-02.1

Prepared in accordance with the
Federal Water Pollution Control Act Amendments
of 1972, Section 303(e) as amended
by the Clean Water Act, P.L. 95-217

and

Section 62.1-44.15(3a) and (13) of the Virginia
State Water Control Law

Adopted by the State Water Control Board
on December 9, 1991

This Plan Supersedes the Roanoke River Basin Comprehensive Water Resources Plan, Water Quality Management Plan, December 9, 1976, and the Fifth Planning District Commission 208 Areawide Plan, July 1976, for those areas of Planning Districts 4, 5, 11 and 12 that are in the Upper Roanoke River Subarea.

Effective Date: February 12, 1992

SEGMENT CLASSIFICATION-STANDARDS
UPPER ROANOKE RIVER SUBAREA

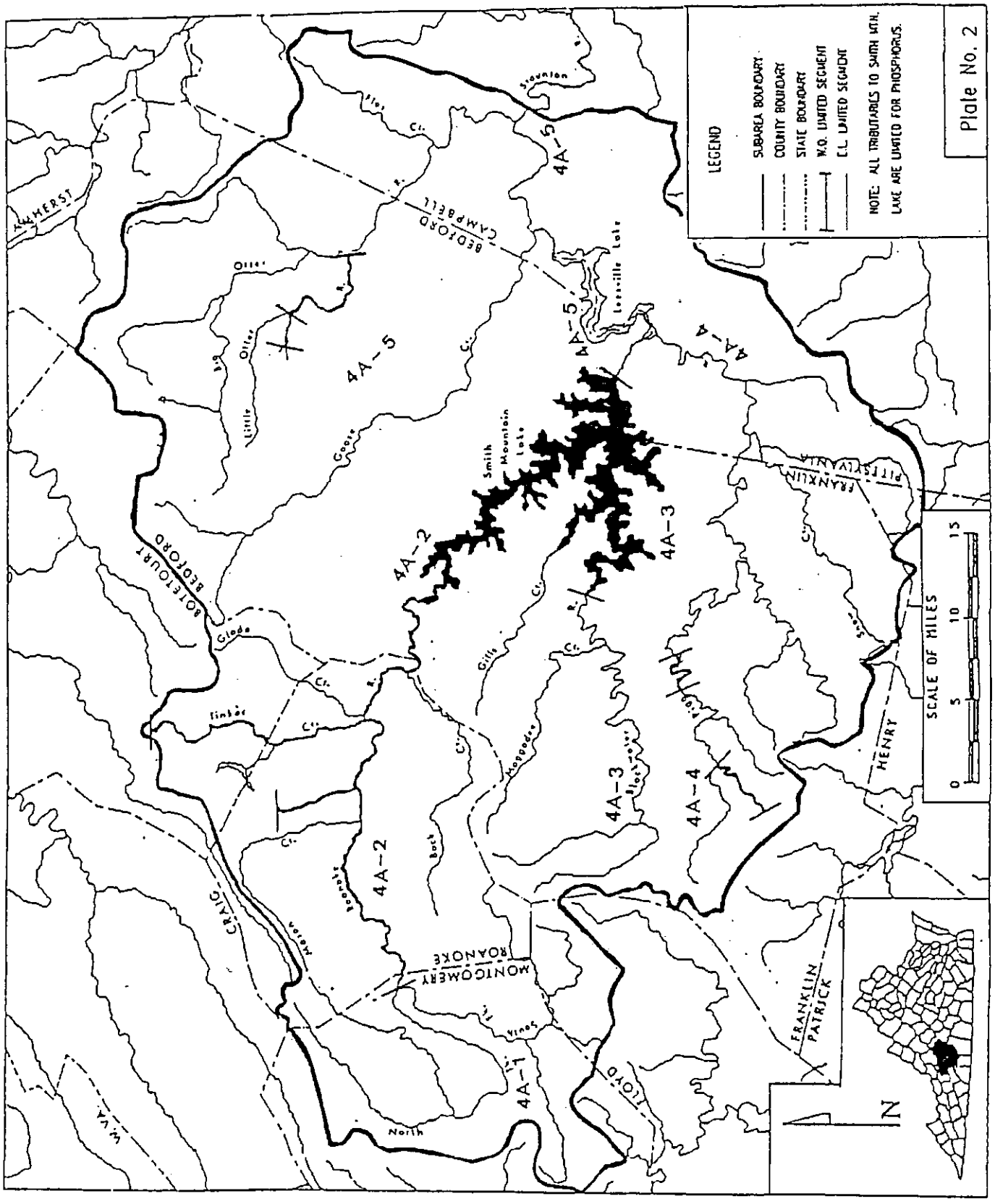


TABLE 2: SEGMENT CLASSIFICATION - STANDARDS
UPPER ROANOKE RIVER SUBAREA
HUC CODE 03010101

Stream Name	303(e) Segment Number	Mile to Mile	Stream Classification	Comments
N.F. Roanoke River	4A-1	30.80 to 0.00	E.L.-P	Main and tributaries.
S.F. Roanoke River	4A-1	16.60 to 0.00	E.L.-P W.Q.-FC	Main and tributaries. Main only.
Roanoke River	4A-2	227.74 to 202.20	W.Q.-DO,P	Main only to 14th Street Bridge.
Peters Creek	4A-2	8.00 to 0.00	W.Q.-DO,P	Main only.
Roanoke River	4A-2	202.20 to 195.87	W.Q.-DO,P	Main to confluence with Prater Creek.
Tinker Creek	4A-2	19.40 to 0.00	W.Q.-DO,P,FC	Main only.
Back Creek	4A-2	25.70 to 0.00	E.L.-P	Main and tributaries.
Roanoke River	4A-2	195.87 to 158.20	W.Q.-DO,P	Main and impounded tributaries (impounded portions only) to Smith Mtn. Dam.
Other Tributaries to the Roanoke River	4A-2	227.74 to 158.20	E.L.-P	Tributaries only.
Blackwater River	4A-3	58.80 to 19.75	E.L.-P	Main and tributaries.
Blackwater River	4A-3	19.75 to 0.00	W.Q.-DO,P	Main and impounded tributaries (impounded portions only) to mouth of Blackwater River.
Other tributaries to the Blackwater River	4A-3	58.80 to 0.00	E.L.-P	Tributaries only.
Pigg River	4A-4	79.80 to 58.00	E.L.	Main and tributaries from the headwaters to the confluence with Furnace Creek - except Story Creek.
Storey Creek	4A-4	10.30 to 0.00	W.Q.-DO	Main Only.
Pigg River	4A-4	58.00 to 47.60	W.Q.-DO	Main only from Furnace Creek to the confluence with Powder Mill Creek.
Pigg River	4A-4	47.60 to 0.00	E.L.	Main and tributaries.
Roanoke River	4A-5	158.20 to 140.54	E.L.	Main and tributaries. (Leesville Lake)
Goose Creek	4A-5	39.30 to 0.00	E.L.	Main and tributaries.
Little Otter River	4A-5	17.15 to 14.36	E.L.	Main and tributaries to confluence with Johns Creek.
Johns Creek	4A-5	4.00 to 0.00	W.Q.-DO	Main only.
Little Otter River	4A-5	14.36 to 0.00	W.Q.-DO	Main only from confluence with Johns Creek to Big Otter River.
Big Otter River	4A-5	42.68 to 0.00	E.L.	Main and tributaries.
Roanoke River	4A-5	140.54 to 123.79	E.L.	Main and tributaries.

Legend:
DO = Dissolved Oxygen P = Phosphorus FC = Fecal Coliform T = Temperature

Fecal Coliform TMDL (Total Maximum Daily Load) Development for South Fork of the Blackwater River, Virginia

Prepared By

MapTech Inc., Blacksburg, VA
for
Virginia Department of Environmental Quality, and
Virginia Department of Conservation and Recreation

December 27, 2000

5.2 Incorporation of a Margin of Safety

A margin of safety (MOS) was incorporated into the TMDL in an effort to account for scientific errors inherent to the TMDL development process, measurement uncertainty in model parameters, and to account for trends which might prevent the water quality goal, as targeted by the TMDL, from being achieved. Scientific errors arise from our inability to fully describe mathematically the processes and mechanisms through which pollutants are delivered to the stream. Model calibration is an attempt to address these errors through adjusting model parameters until a suitable fit to observed data is achieved. Measurement uncertainty also introduces errors in the model calibration, because model parameters that are adjusted to non-representative conditions result in model simulations being biased either low or high. For example, observed data used for model calibration were collected for the purpose of detecting violations of the state's water quality standards. As a result, sample analyses are arbitrarily censored at a level above the state standard. This introduces modeling uncertainty during events that produce high pollutant concentrations. To insure a pollutant reduction, long-term trends in pollutant sources must be considered in load allocations. For instance, if livestock populations within the targeted watershed are increasing, then a larger MOS might be appropriate to account for the expected increase in loads.

The MOS is a subjective value, representing a balance between complete certainty of reaching the in-stream standard and not meeting the standard. The MOS was entered explicitly as 5% of the maximum 30-day geometric mean standard (200 cfu/100 ml). The result was that allocation scenarios were developed with the goal of maintaining the modeled 30-day geometric mean below 190 cfu/100 ml.

5.3 Scenario Development

Allocation scenarios were modeled using HSPF. Existing conditions (Table 5.1) were adjusted until the water quality standard was attained. The standard included the geometric mean of 200 cfu/100mL along with the MOS described in Section 5.2. The development of the allocation scenario was an iterative process that required numerous runs with each followed by an assessment of source reduction against the water quality target. Additional reductions were made until the target was achieved.

5.3.1 Wasteload Allocations

Only one point source is currently discharging fecal coliform in the South Fork Blackwater impairment. This source, Calloway Elementary School, permitted to discharge 1.4 X 10^7 cfu/day, was considered negligible in the impact on in-stream fecal coliform levels. The allocation of the point source, Calloway Elementary School, was equivalent to its current permit levels (0.0019 mgd and 200 cfu/100 ml).

5.3.2 Load Allocations

Load allocations to nonpoint sources are divided into land-based loadings from land uses and direct applied loads in the stream (e.g. livestock, septic systems within 50 feet of a stream, and wildlife). Source reductions include those that are affected by both high and

Decision Rationale

Total Maximum Daily Load of
Fecal Coliform for South Fork of the Blackwater River

I. Introduction

This document will set forth the Environmental Protection Agency's (EPA) rationale for approving the Total Maximum Daily Load (TMDL) of Fecal Coliform for the South Fork of the Blackwater River submitted for final Agency review on January 04, 2001 Our rationale is based on the TMDL submittal document to determine if the TMDL meets the following 8 regulatory conditions pursuant to 40 CFR §130.

1. The TMDLs are designed to implement applicable water quality standards.
2. The TMDLs include a total allowable load as well as individual waste load allocations and load allocations.
3. The TMDLs consider the impacts of background pollutant contributions.
4. The TMDLs consider critical environmental conditions.
5. The TMDLs consider seasonal environmental variations.
6. The TMDLs include a margin of safety.
7. The TMDLs have been subject to public participation.
8. There is reasonable assurance that the TMDLs can be met.

II. Background

Located in Franklin County, Virginia, the overall Blackwater watershed is approximately 108,000 square acres. The South Fork of the Blackwater River watershed comprises 17,706 acres. The TMDL addresses 6.05 stream miles from the headwaters of the South Fork of the Blackwater to its confluence with the North Fork of the Blackwater. Forest is the major land use in the watershed and makes up roughly 75% of the 17,706 acre watershed.

In response to Section 303 (d) of the Clean Water Act (CWA), the Virginia Department of Environmental Quality (VADEQ) listed 6.05 miles of the South Fork of the Blackwater River as being impaired by elevated levels of fecal coliform on Virginia's 1998 303 (d) list. The South Fork of the Blackwater River was listed for violations of Virginia's fecal coliform bacteria standard for primary contact. Fecal Coliform is a bacterium which can be found within the intestinal tract of all warm blooded animals. Therefore, fecal coliform can be found in the fecal wastes of all warm blooded animals. Fecal coliform in itself is not a pathogenic organism. However, fecal coliform indicates the presences of fecal wastes and the potential for the existence of other pathogenic bacteria. The higher concentrations of fecal coliform indicate the elevated likelihood of increased pathogenic organisms.

EPA has been encouraging the States to use e-coli and enterococci as the indicator species instead of fecal coliform. A better correlation has been drawn between the

concentrations of e-coli (and enterococci) and the incidence of gastrointestinal illness. The Commonwealth is pursuing changing the standard from fecal coliform to e-coli.

Virginia designates all of its waters for primary contact, therefore all waters must meet the current fecal standard for primary contact. Virginia's standard is to apply to all streams designated as primary contact for all flows. Through the development of this and other similar TMDLs it was discovered that natural conditions (wildlife contributions to the streams) were causing violations of the standard during low flows. Thus many of Virginia's TMDLs have called for some reduction in the amount of wildlife contributions to the stream. EPA believes that a significant reduction in wildlife is not practical and will not be necessary due to implementation discussion below.

A phased implementation plan will be developed for all streams in which the TMDL calls for reductions in wildlife. The first phase of the implementation will reduce all sources of fecal coliform to the stream other than wildlife. In phase 2, which can occur concurrently to phase 1, the Commonwealth will consider addressing its standards to accommodate this natural loading condition. During phase 2, the Commonwealth has indicated that it will evaluate the following items in relation to the standard. 1) The possibility of placing a minimum flow requirement upon the bacteriological standard. As a result, the standard may not apply to flows below the minimum (possibly 7Q10). This application of the standard is applied in many States. 2) May develop a Use Attainability Analysis (UAA) for streams with wildlife reductions which are not used for frequent bathing. Depending upon the result of that UAA, it is possible that these streams could be designated primary contact infrequent bathing. 3) The Commonwealth will also investigate incorporating a natural background condition for the bacteriological indicator.

After the completion of phase 1 of the implementation plan the Commonwealth will monitor to determine if the wildlife reductions are actually necessary, as the violation rate associated with the wildlife loading may be smaller than the percent error of the model. In phase 3, the Commonwealth will investigate the sampling data to determine if further load reductions are needed in order for these waters to attain standards. If the load reductions and/or the new application of standards allow the stream to attain standards, then no additional work is warranted. However, if standards are still not being attained after the implementation of phases 1 and 2 further work and reductions will be warranted.

The South Fork of the Blackwater River identified as watershed VAW-L08R, was given a high priority for TMDL development. Section 303 (d) of the Clean Water Act and its implementing regulations require a TMDL to be developed for those waterbodies identified as impaired by the State where technology-based and other controls do not provide for the attainment of Water Quality Standards. The TMDL submitted by Virginia is designed to determine the acceptable load of fecal coliform which can be delivered to the South Fork of the Blackwater River, as demonstrated by the Hydrologic Simulation Program Fortran (HSPF)[1], in

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[1]Bicknell, B.R., J.C. Imhoff, J.L. Little, and R.C. Johanson. 1993. Hydrologic Simulation Program-FORTRAN (HSPF): User's Manual for release 10.0. EPA 600/3-84-066. U.S.

order to ensure that the water quality standard is attained and maintained. HSPF is considered an appropriate model to analyze this watershed because of its dynamic ability to simulate both watershed loading and receiving water quality over a wide range of conditions.

The TMDL analysis allocates the application/deposition of fecal coliform to land based and instream sources. For land based sources, the HSPF model accounts for the buildup and washoff of pollutants from these areas. Buildup (accumulation) refers to all of the complex spectrum of dry-weather processes that deposit or remove pollutants between storms.[2] Washoff is the removal of fecal coliform which occurs as a result of runoff associated with storm events. These two processes allow the HSPF model to determine the amount of fecal coliform from land based sources which is reaching the stream. Point sources and wastes deposited directly to the stream were treated as direct deposits. These wastes do not need a transport mechanism to allow them to reach the stream. The allocation plan calls for the reduction in fecal coliform wastes delivered by cattle in-stream and septic systems.

Table #1 summarizes the specific elements of the TMDL.

Parameter	TMDL (cfu/yr)	WLA (cfu/yr)	LA (cfu/yr)	*MOS*[1] (cfu/yr)
Fecal Coliform	4.09 x 10^{14}	2.80×10^{9}	4.06 x 10^{14}	2.57×10^{12}

1 Virginia includes an explicit MOS by identifying the TMDL target as achieving the total fecal coliform water quality concentration of 190 cfu/100ml as opposed to the WQS of 200 cfu/ml. This can be viewed explicitly as a 5% MOS.

EPA believes it is important to recognize the conceptual difference between the WLA values, LA values for sources modeled as direct deposition to stream segments, and LA values for flux sources of fecal coliform to land use categories. The WLA values and LA values for direct sources represent amounts of fecal coliform which are actually deposited into the stream segments. However, LA values for flux sources represent amounts of fecal coliform deposited to land. The actual amount of total nitrogen which reaches the stream segments will be significantly less than the amount of fecal coliform deposited to the land. The HSPF model, which considers landscape processes which affect fecal coliform runoff from land uses, determines the amount of fecal coliform which reaches the stream segments. The LA in table #1 is the amount of cfu reaching the stream from nonpoint sources annually.

The United States Fish and Wildlife Service has been provided with copy of this TMDL..

III. Discussion of Regulatory Conditions

Environmental Protection Agency, Environmental Research Laboratory, Athens, GA.

[2]CH2MHILL, 2000. Fecal Coliform TMDL Development for Cedar, Hall, Byers, and Hutton Creeks Virginia,

EPA finds that Virginia has provided sufficient information to meet all of the 8 basic requirements for establishing a fecal coliform TMDL for the South Fork of the Blackwater River. EPA therefore approves these TMDLs . Our approval is outlined according to the regulatory requirements listed below.

1) The TMDL is designed to meet the applicable water quality standards.

Virginia has indicated that excessive levels of fecal coliform due to nonpoint sources (directly deposited into the River) have caused violations of the water quality standards and designated uses on the South Fork of the Blackwater River. The water quality criterion for fecal coliform is a geometric mean 200 cfu (colony forming units)/100ml or an instantaneous standard of no more than 1,000 cfu/100ml. Two or more samples over a 30 day period are required for the geometric mean standard. Therefore, most violations of the State's water quality standard are due to violations of the instantaneous standard.

The HSPF model is being used to determine the fecal coliform deposition rates to the land as well as loadings to the stream from point and other direct deposit sources necessary to support the fecal coliform water quality criterion and primary contact use. The following discussion is intended to describe how controls on the loading of fecal coliform to the South Fork of the Blackwater River will ensure that the criterion is attained.

The TMDL modelers determine the fecal coliform production rates within the watershed. Information is attained from a wide array of sources on the farm practices in the area (land application rates of manure), the amount and concentration of farm animals, point sources in the watershed, animal access to the stream, wildlife in the watershed, wildlife fecal production rates, land uses, weather, stream geometry, etc. This information was put into the model. The model then combines all the data to determine the hydrology and water quality of the stream.

The hydrology component of the model for all the Blackwater TMDLs was developed on United States Geologic Survey (USGS) gage #02056900 on the Blackwater River. This was done because there were no stream gages on the other waters. The percent error of the simulated flow versus observed flow was within the acceptable limit.

EPA believes that using HSPF to model and allocate fecal coliform will ensure that the designated uses and water quality standards will be attained and maintained for the South Fork of the Blackwater River.

2) The TMDL includes a total allowable load as well as individual waste load allocations and load allocations.

Total Allowable Loads

Virginia indicates that the total allowable loading of fecal coliform is the sum of the loads allocated to land based, precipitation driven nonpoint source areas (impervious areas, built-up area, distributed area, field crop, forest, hayfield, improved pasture, overgrazed pasture, poor pasture, row crop, strip crop), directly deposited nonpoint sources of fecal coliform (cattle in-

stream, wildlife, and failed septic systems), and point sources (Calloway Elementary School). Activities such as the application of manure, fertilizer, and the direct deposition of wastes from grazing animals are considered fluxes to the land use categories. The actual value for the total fecal load can be found in Table 1 of this document. The total allowable load is calculated on an annual basis due to the nature of HSPF model.

Waste Load Allocations

Virginia has stated that there is one point source discharging to the South Fork of the Blackwater River, Calloway Elementary School. EPA regulations require that an approvable TMDL include individual Waste Load Allocations (WLAs) for each point source. According to 40 CFR 122.44(d)(1)(vii)(B), "Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with assumptions and requirements of any available WLA for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7." Furthermore, EPA has authority to object to the issuance of any NPDES permit that is inconsistent with the WLAs established for that point source. The allocation plan for this watershed did not call for any reduction from the point source. Table 2 illustrates the loading associated with Calloway Elementary School. Model runs demonstrate that even if the loading from this sources was zeroed out, wildlife contributions would still cause a violation of the standard.

Table 2 - Summarizes the WLAs for each point source

Point Source Name	Existing Load (cfu/yr)	Allocated Load (cfu/yr)	Percent Reduction
Calloway Elementary School	2.80E+09	2.80E+09	0%

Load Allocations

According to federal regulations at 40 CFR 130.2 (g), load allocations are best estimates of the loading, which may range form reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting loading. Wherever possible natural and nonpoint source loads should be distinguished.

In order to accurately simulate landscape processes and nonpoint source loadings, VA DEQ used the HSPF model to represent the South Fork of the Blackwater River watershed. The HSPF model is a comprehensive modeling system for simulation of watershed hydrology, point and nonpoint loadings, and receiving water quality for conventional pollutants and toxicant[3]. More specifically HSPF uses precipitation data for continuous and storm even simulation to determine total fecal loading to the South Fork of the Blackwater River from impervious areas,

[3] Supra, footnote 2.

Addendum A:

The TMDL developed for the South Fork of the Blackwater River was based on the Virginia State Standard for fecal coliform. As detailed in Section 1.2, the fecal coliform standard states that the 30-day, geometric-mean concentration shall not exceed 200 cfu/100 ml. As such, pollutant concentrations were modeled over the entire duration of a representative modeling period, and pollutant loads were adjusted until the standard, reduced by a margin of safety equal to 5%, was met (Figure 5.5). Table AA.1 represents the average annual loads during the modeled period after allocation of pollutant loads. Loads from permitted point sources (WLA) and nonpoint sources (LA) are represented, as are the load associated with the margin of safety (MOS) and the sum of these three loads (TMDL). It is worth noting that the MOS is much less than 5% of the TMDL. This outcome illustrates the inherent difference between concentration, which is the amount of a pollutant (e.g. numbers of fecal coliforms) in a given volume of water, and annual loads, which is the total amount of the pollutant regardless of the volume of water. Additionally, this situation reflects the fact that it would be inappropriate to use annual loads, such as those in Table AA.1, as a target goal for meeting a water quality standard that is based on concentrations.

Table AA.1 Average annual loads (cfu/year) modeled after TMDL allocation in the South Fork of the Blackwater River Watershed.

Impairment	WLA	LA	MOS	TMDL
South Fork[1]	2.80E+09	4.06E+14	2.57E+12	4.09E+14

1 The only point source permitted for fecal control in the South Fork Blackwater drainage is Calloway Elementary School (VPDES # VA0088561).

Attachment F

Wasteload and Limit Calculations

- **Mixing Zone Calculations (MIXER 2.1)**
- **Effluent Data (pH, oil and grease, nutrients)**
- **Antidegradation Wasteload Allocation Spreadsheet**
- **STATS Program Outputs (ammonia, TRC)**

Mixing Zone Predictions for Callaway Elementary School WWTP

Effluent Flow = 0.0019 MGD
Stream 7Q10 = 1.49 MGD
Stream 30Q10 = 2.55 MGD
Stream 1Q10 = 1.25 MGD
Stream slope = 0.005 ft/ft
Stream width = 15 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .3399 ft
Length = 512.65 ft
Velocity = .4529 ft/sec
Residence Time = .0131 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .471 ft
Length = 386.97 ft
Velocity = .5577 ft/sec
Residence Time = .008 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .3054 ft
Length = 562.12 ft
Velocity = .423 ft/sec
Residence Time = .3691 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Callaway Elementary School WWTP
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Effluent Oil and Grease Data (mg/L)

Date	Monthly Average	Weekly Average
10-Oct-05	<QL	<QL
10-Nov-05	<QL	<QL
10-Dec-05	5	5
10-Jan-06	<QL	<QL
10-Feb-06	<QL	<QL
10-Mar-06	<QL	<QL
10-Apr-06	<QL	<QL
10-May-06	<QL	<QL
10-Jun-06	<QL	<QL
10-Jul-06	<QL	<QL
10-Aug-06	<QL	<QL
10-Sep-06	<QL	<QL
10-Oct-06	<QL	<QL
10-Nov-06	<QL	<QL
10-Dec-06	<QL	<QL
10-Jan-07	<QL	<QL
10-Feb-07	<QL	<QL
10-Mar-07	8	8
10-Apr-07	<QL	<QL
10-May-07	<QL	<QL
10-Jun-07	<QL	<QL
10-Jul-07	<QL	<QL
10-Aug-07	<QL	<QL
10-Sep-07	**58**	**116**
10-Oct-07	7	7
10-Nov-07	6	6
10-Dec-07	<QL	<QL
10-Jan-08	11.5	11.5
10-Feb-08	5.3	5.3
10-Mar-08	<QL	<QL
10-Apr-08	<QL	<QL
10-May-08	<QL	<QL
10-Jun-08	<QL	<QL
10-Jul-08	<QL	<QL
10-Aug-08	<QL	<QL
10-Sep-08	<QL	<QL
10-Oct-08	<QL	<QL
10-Nov-08	<QL	<QL
10-Dec-08	<QL	<QL
10-Jan-09	<QL	<QL
10-Feb-09	<QL	<QL
10-Mar-09	<QL	<QL
10-Apr-09	16	16
10-May-09	<QL	<QL
10-Jun-09	<QL	<QL
10-Jul-09	<QL	<QL
10-Aug-09	5	5
10-Sep-09	<QL	<QL
10-Oct-09	<QL	<QL
10-Nov-09	<QL	<QL
10-Dec-09	6	6
10-Jan-10	<QL	<QL
10-Feb-10	<QL	<QL
10-Mar-10	<QL	<QL
10-Apr-10	<QL	<QL

Callaway Elementary School WWTP
VA0088561

Effluent Oil and Grease Data (mg/L)

Date	Monthly Average	Weekly Average
10-Oct-05	<QL	<QL
10-Nov-05	<QL	<QL
10-Dec-05	5	5
10-Jan-06	<QL	<QL
10-Feb-06	<QL	<QL
10-Mar-06	<QL	<QL
10-Apr-06	<QL	<QL
10-May-06	<QL	<QL
10-Jun-06	<QL	<QL
10-Jul-06	<QL	<QL
10-Aug-06	<QL	<QL
10-Sep-06	<QL	<QL
10-Oct-06	<QL	<QL
10-Nov-06	<QL	<QL
10-Dec-06	<QL	<QL
10-Jan-07	<QL	<QL
10-Feb-07	<QL	<QL
10-Mar-07	8	8
10-Apr-07	<QL	<QL
10-May-07	<QL	<QL
10-Jun-07	<QL	<QL
10-Jul-07	<QL	<QL
10-Aug-07	<QL	<QL
10-Sep-07	**58**	**116**
10-Oct-07	7	7
10-Nov-07	6	6
10-Dec-07	<QL	<QL
10-Jan-08	11.5	11.5
10-Feb-08	5.3	5.3
10-Mar-08	<QL	<QL
10-Apr-08	<QL	<QL
10-May-08	<QL	<QL
10-Jun-08	<QL	<QL
10-Jul-08	<QL	<QL
10-Aug-08	<QL	<QL
10-Sep-08	<QL	<QL
10-Oct-08	<QL	<QL
10-Nov-08	<QL	<QL
10-Dec-08	<QL	<QL
10-Jan-09	<QL	<QL
10-Feb-09	<QL	<QL
10-Mar-09	<QL	<QL
10-Apr-09	16	16
10-May-09	<QL	<QL
10-Jun-09	<QL	<QL
10-Jul-09	<QL	<QL
10-Aug-09	5	5
10-Sep-09	<QL	<QL
10-Oct-09	<QL	<QL
10-Nov-09	<QL	<QL
10-Dec-09	6	6
10-Jan-10	<QL	<QL
10-Feb-10	<QL	<QL
10-Mar-10	<QL	<QL
10-Apr-10	<QL	<QL

Callaway Elementary School WWTP
VA0088561

Effluent Nutrient Monitoring

Date	P, Total mg/L	N, total mg/L
10-Oct-05	5.97	31.6
10-Nov-05	7.75	37.7
10-Dec-05	9.54	56.2
10-Jan-06	4.26	52.6
10-Feb-06	3.74	42.4
10-Mar-06	2.82	49.1
10-Apr-06	8.15	60.9
10-May-06	12.8	56.3
10-Jun-06	8.37	51.4
10-Jul-06	4.04	49.5
10-Aug-06	6.76	32.9
10-Sep-06	4.6	10.6
10-Oct-06	6.1	41.8
10-Nov-06	9.53	24.1
10-Dec-06	8.6	38.7
10-Jan-07	10	48.1
10-Feb-07	9.26	63.2
10-Mar-07	10.6	45.5
10-Apr-07	11.2	63.7
10-May-07	7.98	54.7
10-Jun-07	15.6	59.7
10-Jul-07	14.4	28.8
10-Aug-07	5.18	44.7
10-Sep-07	5.41	55.1
10-Oct-07	3	32.7
10-Nov-07	9.05	27.2
10-Dec-07	6.15	30.3
10-Jan-08	13.8	42.9
10-Feb-08	4.06	25.7
10-Mar-08	8.79	45.8
10-Apr-08	7.17	66.9
10-May-08	9.03	42.05
10-Jun-08	9.09	48.85
10-Jul-08	8.1	67.8
10-Aug-08	<QL	38.6
10-Sep-08	4.65	41.7
10-Oct-08	6.98	38.9
10-Nov-08	13.04	48.2
10-Dec-08	10.26	63.38
10-Jan-09	7.36	55.9
10-Feb-09	11.21	47.3
10-Mar-09	5.64	57.33
10-Apr-09	10.29	65.15
10-May-09	14.75	76.2
10-Jun-09	9.32	38.65

Mean P	7.50	mg/L
Max P	15.6	mg/L
Min P	<QL	mg/L

Mean N	42.65	mg/L
Max N	76.2	mg/L
Min N	6.51	mg/L

Callaway Elementary School WWTP
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Effluent Nutrient Monitoring

Date	P, Total mg/L	N, total mg/L
10-Jul-09	9.68	35.46
10-Aug-09	4.27	25.39
10-Sep-09	1.3	6.51
10-Oct-09	5.82	31.04
10-Nov-09	4.24	29.27
10-Dec-09	11.89	44.45
10-Jan-10	4.79	19.21
10-Feb-10	2.7	25.2
10-Mar-10	1.5	12.3
10-Apr-10	1.9	15.9

Callaway Elementary School WWTP
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Effluent pH Data (S.U.)

Date	Minimum	Maximum
10-Sep-05	6.5	7
10-Oct-05	6.5	7
10-Nov-05	6.5	7
10-Dec-05	6.5	7
10-Jan-06	6.5	7
10-Feb-06	6.5	7
10-Mar-06	6.5	7
10-Apr-06	6.5	7
10-May-06	6.5	7
10-Jun-06	6.5	7
10-Jul-06	6.5	7
10-Aug-06	7	7
10-Sep-06	6.5	7
10-Oct-06	6.5	7
10-Nov-06	6.5	7
10-Dec-06	6.8	7
10-Jan-07	6.8	7
10-Feb-07	6.8	7
10-Mar-07	6.8	7
10-Apr-07	6.8	6.9
10-May-07	6.8	6.9
10-Jun-07	6.8	6.9
10-Jul-07	6.9	6.9
10-Aug-07	6.9	6.9
10-Sep-07	6.9	7
10-Oct-07	6.9	7
10-Nov-07	6.8	6.9
10-Dec-07	6.9	6.9
10-Jan-08	6.9	6.9
10-Feb-08	6.9	7
10-Mar-08	6.9	6.9
10-Apr-08	6.9	6.9
10-May-08	6.9	6.9
10-Jun-08	6.9	6.9
10-Jul-08	6.9	6.9
10-Aug-08	6.9	6.9
10-Sep-08	6.9	6.9
10-Oct-08	6.9	6.9
10-Nov-08	6.9	6.9
10-Dec-08	6.9	6.9
10-Jan-09	6.9	6.9
10-Feb-09	6.9	6.9
10-Mar-09	6.9	6.9
10-Apr-09	6.9	6.9
10-May-09	6.9	6.9
10-Jun-09	6.9	6.9
10-Jul-09	6.9	6.9

90th Percentile pH	7 S.U.
10th Percentile pH	6.5 S.U.

Callaway Elementary School WWTP
VA0088561

Effluent pH Data (S.U.)

Date	Minimum	Maximum
10-Aug-09	6.9	6.9
10-Sep-09	6.9	6.9
10-Oct-09	6.9	7
10-Nov-09	6.9	7
10-Dec-09	6.9	7
10-Jan-10	6.9	7
10-Feb-10	6.9	7.3
10-Mar-10	6.9	7.4
10-Apr-10	6.9	7.3

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Callaway Elementary School WWTP Permit No.: VA0088561

Receiving Stream: Blackwater River, South Fork Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	25 mg/L
90% Temperature (Annual) =	20.8 deg C
90% Temperature (Wet season) =	16.6 deg C
90% Maximum pH =	8.18 SU
10% Maximum pH =	7.06 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	1.25 MGD
7Q10 (Annual) =	1.49 MGD
30Q10 (Annual) =	2.55 MGD
1Q10 (Wet season) =	5.48 MGD
30Q10 (Wet season)	2.55 MGD
30Q5 =	3.63 MGD
Harmonic Mean =	11.2 MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	25 mg/L
90% Temp (Annual) =	20.8 deg C
90% Temp (Wet season) =	16.6 deg C
90% Maximum pH =	7 SU
10% Maximum pH =	6.5 SU
Discharge Flow =	0.0019 MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	1.9E+06	--	--	na	9.9E+01	--	--	na	1.9E+05	--	--	na	1.9E+05
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.8E+04	--	--	na	9.3E-01	--	--	na	1.8E+03	--	--	na	1.8E+03
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	1.5E+04	--	--	na	2.5E-01	--	--	na	1.5E+03	--	--	na	1.5E+03
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	2.0E+03	--	na	2.9E+00	7.5E-01	--	na	5.0E-05	4.9E+02	--	na	2.9E-01	4.9E+02	--	na	2.9E-01
Ammonia-N (mg/l) (Yearly)	0	6.06E+00	1.24E+00	na	--	4.0E+03	1.7E+03	na	--	1.52E+00	3.11E-01	na	--	1.0E+03	4.2E+02	na	--	1.0E+03	4.2E+02	na	--
Ammonia-N (mg/l) (High Flow)	0	5.98E+00	1.63E+00	na	--	1.7E+04	2.2E+03	na	--	1.49E+00	4.08E-01	na	--	4.3E+03	5.5E+02	na	--	4.3E+03	5.5E+02	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	7.6E+07	--	--	na	4.0E+03	--	--	na	7.6E+06	--	--	na	7.6E+06
Antimony	0	--	--	na	6.4E+02	--	--	na	1.2E+06	--	--	na	6.4E+01	--	--	na	1.2E+05	--	--	na	1.2E+05
Arsenic	0	3.4E+02	1.5E+02	na	--	2.2E+05	1.2E+05	na	--	8.5E+01	3.8E+01	na	--	5.6E+04	2.9E+04	na	--	5.6E+04	2.9E+04	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	3.0E+06	--	--	na	5.1E+01	--	--	na	3.0E+05	--	--	na	3.0E+05
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	1.2E+01	--	--	na	2.0E-04	--	--	na	1.2E+00	--	--	na	1.2E+00
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.1E+03	--	--	na	1.8E-02	--	--	na	1.1E+02	--	--	na	1.1E+02
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.1E+03	--	--	na	1.8E-02	--	--	na	1.1E+02	--	--	na	1.1E+02
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.1E+03	--	--	na	1.8E-02	--	--	na	1.1E+02	--	--	na	1.1E+02
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.1E+03	--	--	na	1.8E-02	--	--	na	1.1E+02	--	--	na	1.1E+02
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	3.1E+04	--	--	na	5.3E-01	--	--	na	3.1E+03	--	--	na	3.1E+03
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	1.2E+08	--	--	na	6.5E+03	--	--	na	1.2E+07	--	--	na	1.2E+07
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	1.3E+05	--	--	na	2.2E+00	--	--	na	1.3E+04	--	--	na	1.3E+04
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	8.3E+06	--	--	na	1.4E+02	--	--	na	8.3E+05	--	--	na	8.3E+05
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	3.6E+06	--	--	na	1.9E+02	--	--	na	3.6E+05	--	--	na	3.6E+05
Cadmium	0	8.2E-01	3.8E-01	na	--	5.4E+02	3.0E+02	na	--	2.1E-01	9.5E-02	na	--	1.4E+02	7.5E+01	na	--	1.4E+02	7.5E+01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	9.4E+04	--	--	na	1.6E+00	--	--	na	9.4E+03	--	--	na	9.4E+03
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	1.6E+03	3.4E+00	na	4.8E+01	6.0E-01	1.1E-03	na	8.1E-04	4.0E+02	8.4E-01	na	4.8E+00	4.0E+02	8.4E-01	na	4.8E+00
Chloride	0	8.6E+05	2.3E+05	na	--	5.7E+08	1.8E+08	na	--	2.2E+05	5.8E+04	na	--	1.4E+08	4.5E+07	na	--	1.4E+08	4.5E+07	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.3E+04	8.6E+03	na	--	4.8E+00	2.8E+00	na	--	3.1E+03	2.2E+03	na	--	3.1E+03	2.2E+03	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	3.1E+06	--	--	na	1.6E+02	--	--	na	3.1E+05	--	--	na	3.1E+05

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	7.7E+05	--	--	na	1.3E+01	--	--	na	7.7E+04	--	--	na	7.7E+04
Chloroform	0	--	--	na	1.1E+04	--	--	na	2.1E+07	--	--	na	1.1E+03	--	--	na	2.1E+06	--	--	na	2.1E+06
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	3.1E+06	--	--	na	1.6E+02	--	--	na	3.1E+05	--	--	na	3.1E+05
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	2.9E+05	--	--	na	1.5E+01	--	--	na	2.9E+04	--	--	na	2.9E+04
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	5.5E+01	3.2E+01	na	--	2.1E-02	1.0E-02	na	--	1.4E+01	8.0E+00	na	--	1.4E+01	8.0E+00	na	--
Chromium III	0	1.8E+02	2.4E+01	na	--	1.2E+05	1.9E+04	na	--	4.6E+01	6.0E+00	na	--	3.0E+04	4.7E+03	na	--	3.0E+04	4.7E+03	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.1E+04	8.6E+03	na	--	4.0E+00	2.8E+00	na	--	2.6E+03	2.2E+03	na	--	2.6E+03	2.2E+03	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	1.9E+04	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.1E+02	--	--	na	1.8E-03	--	--	na	1.1E+01	--	--	na	1.1E+01
Copper	0	3.6E+00	2.7E+00	na	--	2.4E+03	2.2E+03	na	--	9.1E-01	6.8E-01	na	--	6.0E+02	5.4E+02	na	--	6.0E+02	5.4E+02	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	1.4E+04	4.1E+03	na	3.1E+07	5.5E+00	1.3E+00	na	1.6E+03	3.6E+03	1.0E+03	na	3.1E+06	3.6E+03	1.0E+03	na	3.1E+06
DDD[C]	0	--	--	na	3.1E-03	--	--	na	1.8E+01	--	--	na	3.1E-04	--	--	na	1.8E+00	--	--	na	1.8E+00
DDE[C]	0	--	--	na	2.2E-03	--	--	na	1.3E+01	--	--	na	2.2E-04	--	--	na	1.3E+00	--	--	na	1.3E+00
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	7.2E+02	7.9E-01	na	1.3E+01	2.8E-01	2.5E-04	na	2.2E-04	1.8E+02	2.0E-01	na	1.3E+00	1.8E+02	2.0E-01	na	1.3E+00
Demeton	0	--	1.0E-01	na	--	--	7.9E+01	na	--	--	2.5E-02	na	--	--	2.0E+01	na	--	--	2.0E+01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.1E+02	1.3E+02	na	--	4.3E-02	4.3E-02	na	--	2.8E+01	3.3E+01	na	--	2.8E+01	3.3E+01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.1E+03	--	--	na	1.8E-02	--	--	na	1.1E+02	--	--	na	1.1E+02
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	2.5E+06	--	--	na	1.3E+02	--	--	na	2.5E+05	--	--	na	2.5E+05
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.8E+06	--	--	na	9.6E+01	--	--	na	1.8E+05	--	--	na	1.8E+05
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	3.6E+05	--	--	na	1.9E+01	--	--	na	3.6E+04	--	--	na	3.6E+04
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	1.7E+03	--	--	na	2.8E-02	--	--	na	1.7E+02	--	--	na	1.7E+02
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.0E+06	--	--	na	1.7E+01	--	--	na	1.0E+05	--	--	na	1.0E+05
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	2.2E+06	--	--	na	3.7E+01	--	--	na	2.2E+05	--	--	na	2.2E+05
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	1.4E+07	--	--	na	7.1E+02	--	--	na	1.4E+06	--	--	na	1.4E+06
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.9E+07	--	--	na	1.0E+03	--	--	na	1.9E+06	--	--	na	1.9E+06
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	5.5E+05	--	--	na	2.9E+01	--	--	na	5.5E+04	--	--	na	5.5E+04
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	8.8E+05	--	--	na	1.5E+01	--	--	na	8.8E+04	--	--	na	8.8E+04
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	1.2E+06	--	--	na	2.1E+01	--	--	na	1.2E+05	--	--	na	1.2E+05
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	1.6E+02	4.4E+01	na	3.2E+00	6.0E-02	1.4E-02	na	5.4E-05	4.0E+01	1.1E+01	na	3.2E-01	4.0E+01	1.1E+01	na	3.2E-01
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	8.4E+07	--	--	na	4.4E+03	--	--	na	8.4E+06	--	--	na	8.4E+06
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.6E+06	--	--	na	8.5E+01	--	--	na	1.6E+05	--	--	na	1.6E+05
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	2.1E+09	--	--	na	1.1E+05	--	--	na	2.1E+08	--	--	na	2.1E+08
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	8.6E+08	--	--	na	4.5E+02	--	--	na	8.6E+05	--	--	na	8.6E+05
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.0E+07	--	--	na	5.3E+02	--	--	na	1.0E+06	--	--	na	1.0E+06
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	5.4E+05	--	--	na	2.8E+01	--	--	na	5.4E+04	--	--	na	5.4E+04
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	2.0E+05	--	--	na	3.4E+00	--	--	na	2.0E+04	--	--	na	2.0E+04
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	9.7E-05	--	--	na	5.1E-09	--	--	na	9.7E-06	--	--	na	9.7E-06
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	1.2E+04	--	--	na	2.0E-01	--	--	na	1.2E+03	--	--	na	1.2E+03
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.4E+02	4.4E+01	na	1.7E+05	5.5E-02	1.4E-02	na	8.9E+00	3.6E+01	1.1E+01	na	1.7E+04	3.6E+01	1.1E+01	na	1.7E+04
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.4E+02	4.4E+01	na	1.7E+05	5.5E-02	1.4E-02	na	8.9E+00	3.6E+01	1.1E+01	na	1.7E+04	3.6E+01	1.1E+01	na	1.7E+04
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	1.4E+02	4.4E+01	--	--	5.5E-02	1.4E-02	--	--	3.6E+01	1.1E+01	--	--	3.6E+01	1.1E+01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.7E+05	--	--	na	8.9E+00	--	--	na	1.7E+04	--	--	na	1.7E+04
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	5.7E+01	2.8E+01	na	1.1E+02	2.2E-02	9.0E-03	na	6.0E-03	1.4E+01	7.1E+00	na	1.1E+01	1.4E+01	7.1E+00	na	1.1E+01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	5.7E+02	--	--	na	3.0E-02	--	--	na	5.7E+01	--	--	na	5.7E+01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	4.0E+06	--	--	na	2.1E+02	--	--	na	4.0E+05	--	--	na	**4.0E+05**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	2.7E+05	--	--	na	1.4E+01	--	--	na	2.7E+04	--	--	na	**2.7E+04**
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.0E+07	--	--	na	5.3E+02	--	--	na	1.0E+06	--	--	na	**1.0E+06**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	7.9E+00	na	--	--	2.5E-03	na	--	--	2.0E+00	na	--	--	**2.0E+00**	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	3.4E+02	3.0E+00	na	4.7E+00	1.3E-01	9.5E-04	na	7.9E-05	8.6E+01	7.5E-01	na	4.7E-01	**8.6E+01**	**7.5E-01**	na	**4.7E-01**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	3.4E+02	3.0E+00	na	2.3E+00	1.3E-01	9.5E-04	na	3.9E-05	8.6E+01	7.5E-01	na	2.3E-01	**8.6E+01**	**7.5E-01**	na	**2.3E-01**
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	1.7E+01	--	--	na	2.9E-04	--	--	na	1.7E+00	--	--	na	**1.7E+00**
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.1E+06	--	--	na	1.8E+01	--	--	na	1.1E+05	--	--	na	**1.1E+05**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	2.9E+02	--	--	na	4.9E-03	--	--	na	2.9E+01	--	--	na	**2.9E+01**
Hexachlorocyclohexane Beta BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.0E+03	--	--	na	1.7E-02	--	--	na	1.0E+02	--	--	na	**1.0E+02**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	6.3E+02	--	na	1.1E+04	2.4E-01	--	na	1.8E-01	1.6E+02	--	na	1.1E+03	**1.6E+02**	--	na	**1.1E+03**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	2.1E+06	--	--	na	1.1E+02	--	--	na	2.1E+05	--	--	na	**2.1E+05**
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	1.9E+05	--	--	na	3.3E+00	--	--	na	1.9E+04	--	--	na	**1.9E+04**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.6E+03	na	--	--	5.0E-01	na	--	--	3.9E+02	na	--	--	**3.9E+02**	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.1E+03	--	--	na	1.8E-02	--	--	na	1.1E+02	--	--	na	**1.1E+02**
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	5.7E+07	--	--	na	9.6E+02	--	--	na	5.7E+06	--	--	na	**5.7E+06**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Lead	0	2.0E+01	2.3E+00	na	--	1.3E+04	1.8E+03	na	--	5.1E+00	5.8E-01	na	--	3.4E+03	4.5E+02	na	--	**3.4E+03**	**4.5E+02**	na	--
Malathion	0	--	1.0E-01	na	--	--	7.9E+01	na	--	--	2.5E-02	na	--	--	2.0E+01	na	--	--	**2.0E+01**	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	9.2E+02	6.0E+02	--	--	3.5E-01	1.9E-01	--	--	2.3E+02	1.5E+02	--	--	**2.3E+02**	**1.5E+02**	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	2.9E+06	--	--	na	1.5E+02	--	--	na	2.9E+05	--	--	na	**2.9E+05**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	3.5E+07	--	--	na	5.9E+02	--	--	na	3.5E+06	--	--	na	**3.5E+06**
Methoxychlor	0	--	3.0E-02	na	--	--	2.4E+01	na	--	--	7.5E-03	na	--	--	5.9E+00	na	--	--	**5.9E+00**	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	3.7E+04	4.9E+03	na	8.8E+06	1.4E+01	1.6E+00	na	4.6E+02	9.3E+03	1.2E+03	na	8.8E+05	**9.3E+03**	**1.2E+03**	na	**8.8E+05**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	1.3E+06	--	--	na	6.9E+01	--	--	na	1.3E+05	--	--	na	**1.3E+05**
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	1.8E+05	--	--	na	3.0E+00	--	--	na	1.8E+04	--	--	na	**1.8E+04**
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	3.5E+05	--	--	na	6.0E+00	--	--	na	3.5E+04	--	--	na	**3.5E+04**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	3.0E+04	--	--	na	5.1E-01	--	--	na	3.0E+03	--	--	na	**3.0E+03**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	1.8E+04	5.2E+03	na	--	7.0E+00	1.7E+00	--	--	4.6E+03	1.3E+03	--	--	**4.6E+03**	**1.3E+03**	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	4.3E+01	1.0E+01	na	--	1.6E-02	3.3E-03	na	--	1.1E+01	2.6E+00	na	--	**1.1E+01**	**2.6E+00**	na	--
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.1E+01	na	3.8E+00	--	3.5E-03	na	6.4E-05	--	2.7E+00	na	3.8E-01	--	**2.7E+00**	na	**3.8E-01**
Pentachlorophenol [C]	0	9.2E+00	7.1E+00	na	3.0E+01	6.1E+03	5.6E+03	na	1.8E+05	2.3E+00	1.8E+00	na	3.0E+00	1.5E+03	1.4E+03	na	1.8E+04	**1.5E+03**	**1.4E+03**	na	**1.8E+04**
Phenol	0	--	--	na	8.6E+05	--	--	na	1.6E+09	--	--	na	8.6E+04	--	--	na	1.6E+08	--	--	na	**1.6E+08**
Pyrene	0	--	--	na	4.0E+03	--	--	na	7.6E+06	--	--	na	4.0E+02	--	--	na	7.6E+05	--	--	na	**7.6E+05**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	7.6E+03	--	--	na	4.0E-01	--	--	na	7.6E+02	--	--	na	**7.6E+02**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	1.3E+04	3.9E+03	na	8.0E+06	5.0E+00	1.3E+00	na	4.2E+02	3.3E+03	9.8E+02	na	8.0E+05	**3.3E+03**	**9.8E+02**	**na**	**8.0E+05**
Silver	0	3.2E-01	--	na	--	2.1E+02	--	na	--	7.9E-02	--	na	--	5.2E+01	--	na	--	**5.2E+01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	2.4E+05	--	--	na	4.0E+00	--	--	na	2.4E+04	**--**	**--**	**na**	**2.4E+04**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	1.9E+05	--	--	na	3.3E+00	--	--	na	1.9E+04	**--**	**--**	**na**	**1.9E+04**
Thallium	0	--	--	na	4.7E-01	--	--	na	9.0E+02	--	--	na	4.7E-02	--	--	na	9.0E+01	**--**	**--**	**na**	**9.0E+01**
Toluene	0	--	--	na	6.0E+03	--	--	na	1.1E+07	--	--	na	6.0E+02	--	--	na	1.1E+06	**--**	**--**	**na**	**1.1E+06**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	4.8E+02	1.6E-01	na	1.7E+01	1.8E-01	5.0E-05	na	2.8E-04	1.2E+02	3.9E-02	na	1.7E+00	**1.2E+02**	**3.9E-02**	**na**	**1.7E+00**
Tributyltin	0	4.6E-01	7.2E-02	na	--	3.0E+02	5.7E+01	na	--	1.2E-01	1.8E-02	na	--	7.6E+01	1.4E+01	na	--	**7.6E+01**	**1.4E+01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	1.3E+05	--	--	na	7.0E+00	--	--	na	1.3E+04	**--**	**--**	**na**	**1.3E+04**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	9.4E+05	--	--	na	1.6E+01	--	--	na	9.4E+04	**--**	**--**	**na**	**9.4E+04**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	1.8E+06	--	--	na	3.0E+01	--	--	na	1.8E+05	**--**	**--**	**na**	**1.8E+05**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	1.4E+05	--	--	na	2.4E+00	--	--	na	1.4E+04	**--**	**--**	**na**	**1.4E+04**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	1.4E+05	--	--	na	2.4E+00	--	--	na	1.4E+04	**--**	**--**	**na**	**1.4E+04**
Zinc	0	3.6E+01	3.6E+01	na	2.6E+04	2.4E+04	2.9E+04	na	5.0E+07	9.1E+00	9.1E+00	na	2.6E+03	6.0E+03	7.2E+03	na	5.0E+06	**6.0E+03**	**7.2E+03**	**na**	**5.0E+06**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	1.2E+05
Arsenic	1.8E+04
Barium	na
Cadmium	4.5E+01
Chromium III	2.8E+03
Chromium VI	1.1E+03
Copper	2.4E+02
Iron	na
Lead	2.7E+02
Manganese	na
Mercury	9.1E+01
Nickel	7.4E+02
Selenium	5.9E+02
Silver	2.1E+01
Zinc	2.4E+03

Note: do not use QL's lower than the minimum QL's provided in agency guidance

0.002 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"

Discharge Flow Used for WQS-WLA Calculations (MGD 0.002

	Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	1.250	5.480	1.252	5.482
7Q10	1.490	N/A	1.492	N/A
30Q10	2.550	2.550	2.552	2.552
30Q5	3.630	N/A	3.632	N/A
Harm. Mean	11.200	N/A	11.202	N/A
Annual Avg.	0.000	N/A	0.002	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	20.800	16.600
30Q10 90th% Temp. Mix (deg C)	20.800	16.600
1Q10 90th% pH Mix (SU)	8.171	8.178
30Q10 90th% pH Mix (SU)	8.175	8.175
1Q10 10th% pH Mix (SU)	7.058	N/A
7Q10 10th% pH Mix (SU)	7.059	N/A
	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3)	25.0	25.0
7Q10 Hardness (mg/L as CaCO3)	25.0	25.0

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.171
(7.204 - pH)	-0.967
(pH - 7.204)	0.967
Trout Present Criterion (mg N/l	4.048
Trout Absent Criterion (mg N/L	6.061
Trout Present?	n
Effective Criterion (mg N/L)	6.061

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	20.800
90th Percentile pH (SU)	8.175
MIN	1.901
MAX	20.800
(7.688 - pH)	-0.487
(pH - 7.688)	0.487
Early LS Present Criterion (mg N	1.244
Early LS Absent Criterion (mg N/	1.244
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.244

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.178
(7.204 - pH)	-0.974
(pH - 7.204)	0.974
Trout Present Criterion (mg N/l	3.993
Trout Absent Criterion (mg N/L	5.978
Trout Present?	n
Effective Criterion (mg N/L)	5.978

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	16.600
90th Percentile pH (SU)	8.175
MIN	2.492
MAX	16.600
(7.688 - pH)	-0.487
(pH - 7.688)	0.487
Early LS Present Criterion (mg N	1.630
Early LS Absent Criterion (mg N/	1.630
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.630

0.002 MGD DISCHARGE FLOW - COMPLETE STREAM MIX

Discharge Flow Used for WQS-WLA Calculations (MGD 0.002

	100% Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	1.250	5.480	1.252	5.482
7Q10	1.490	N/A	1.492	N/A
30Q10	2.550	2.550	2.552	2.552
30Q5	3.630	N/A	3.632	N/A
Harm. Mean	11.200	N/A	11.202	N/A
Annual Avg.	0.000	N/A	0.002	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	20.800	16.600
30Q10 90th% Temp. Mix (deg C)	20.800	16.600
1Q10 90th% pH Mix (SU)	8.171	8.178
30Q10 90th% pH Mix (SU)	8.175	8.175
1Q10 10th% pH Mix (SU)	7.058	N/A
7Q10 10th% pH Mix (SU)	7.059	N/A
	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3) =	25.000	25.000
7Q10 Hardness (mg/L as CaCO3) =	25.000	25.000

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.171
(7.204 - pH)	-0.967
(pH - 7.204)	0.967
Trout Present Criterion (mg N/l	4.048
Trout Absent Criterion (mg N/L	6.061
Trout Present?	n
Effective Criterion (mg N/L)	6.061

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	20.800
90th Percentile pH (SU)	8.175
MIN	1.901
MAX	20.800
(7.688 - pH)	-0.487
(pH - 7.688)	0.487
Early LS Present Criterion (mg N	1.244
Early LS Absent Criterion (mg N/	1.244
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.244

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.178
(7.204 - pH)	-0.974
(pH - 7.204)	0.974
Trout Present Criterion (mg N/l	3.993
Trout Absent Criterion (mg N/L	5.978
Trout Present?	n
Effective Criterion (mg N/L)	5.978

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	16.600
90th Percentile pH (SU)	8.175
MIN	2.492
MAX	16.600
(7.688 - pH)	-0.487
(pH - 7.688)	0.487
Early LS Present Criterion (mg N	1.630
Early LS Absent Criterion (mg N/	1.630
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.630

5/4/2010 9:31:45 AM

Facility = Callaway Elementary School WWTP
Chemical = ammonia as N (mg/L)
Chronic averaging period = 30
WLAa = 4000
WLAc =
Q.L. = 0.2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

9

5/12/2005 3:30:37 PM

Facility = Callaway Elementary School WWTP (Outfall 001)
Chemical = TRC (mg/L)
Chronic averaging period = 4
WLAa = 4
WLAc =
Q.L. = 0.1
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 1000
Variance = 360000
C.V. = 0.6
97th percentile daily values = 2433.41
97th percentile 4 day average = 1663.79
97th percentile 30 day average= 1206.05
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 4
Average Weekly limit = 2.38602034360889
Average Monthly Limit = 1.98248465547072

The data are:

1000

Attachment G

Regional Water Quality Model Output

********** ********** **********

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Callaway Elementary School STP DISCHARGE

TO South Fork of the Blackwater River

COMMENT: Test for DO or max daily BOD limit.

THE SIMULATION STARTS AT THE Callaway Elementary School STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .0019 MGD cBOD5 = 25 Mg/L TKN = 20 Mg/L D.O. = 0 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 7.503 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 1.29400 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.395 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	0.26	0.397	16.154	0.800	0.350	0.000	1192.50	23.30	8.217

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 1.2959 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	7.384	5.084	0.108
0.100	0.100	7.395	5.012	0.107
0.200	0.200	7.395	5.000	0.106
0.260	0.260	7.395	5.000	0.106

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
07-05-2000 17:24:02

DATA FILE = CALWAYDO.MOD

****

REGIONAL MODELING SYSTEM VERSION 3.2

DATA FILE SUMMARY

****

THE NAME OF THE DATA FILE IS: CALWAYDO.MOD

THE STREAM NAME IS: South Fork of the Blackwater River
THE RIVER BASIN IS: Roanoke River
THE SECTION NUMBER IS: 6a
THE CLASSIFICATION IS: III

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: Callaway Elementary School STP

PROPOSED LIMITS ARE:
FLOW = .0019 MGD
BOD5 = 25 MG/L
TKN = 20 MG/L
D.O. = 0 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 1

7Q10 WILL BE CALCULATED BY: FLOW COMPARISON
THE GAUGE NAME IS: Blackwater River @ Rocky Mount
GAUGE DRAINAGE AREA = 115 SQ.MI.
OBSERVED FLOW AT GAUGE = 8.66 MGD
GAUGE 7Q10 = 8.66 MGD
OBSERVED FLOW AT DISCHARGE = 1.294 MGD

STREAM A DRY DITCH AT DISCHARGE (Y/N) = N
ANTIDEGRADATION APPLIES (Y/N) = N

ALLOCATION DESIGN TEMPERATURE = 23.3 °C

SEGMENT INFORMATION

####### SEGMENT # 1 #######

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH = .26 MI

SEGMENT WIDTH = 15 FT
SEGMENT DEPTH = .31 FT
SEGMENT VELOCITY = .43 FT/SEC

DRAINAGE AREA AT SEGMENT START = 22.17 SQ.MI.
DRAINAGE AREA AT SEGMENT END = 22.68 SQ.MI.

ELEVATION AT UPSTREAM END = 1196 FT
ELEVATION AT DOWNSTREAM END = 1189 FT

THE CROSS SECTION IS: RECTANGULAR
THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = Y
THE SEGMENT LENGTH IS 50 % POOLS
POOL DEPTH = .4 FT
THE SEGMENT LENGTH IS 50 % RIFFLES
RIFFLE DEPTH = .25 FT

THE BOTTOM TYPE = SMALL ROCK
SLUDGE DEPOSITS = NONE
AQUATIC PLANTS = NONE
ALGAE OBSERVED = COVERS ENTIRE BOTTOM
WATER COLORED GREEN (Y/N) = N

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
07-05-2000 17:24:32

Attachment H

Public Notice and Comments

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Franklin County, Virginia
PUBLIC COMMENT PERIOD: 30 days following the public notice issue date; comment period ends 4:30 pm of last day
PERMIT NAME: Virginia Pollutant Discharge Elimination System – Wastewater issued by DEQ, under the authority of the State Water Control Board
APPLICANT NAME, ADDRESS, AND PERMIT NUMBER: Franklin County Public Schools, 250 School Service Road Rocky Mount, VA 24151, VA0088561
FACILITY NAME AND LOCATION: Callaway Elementary School, 8451 Callaway Road. Callaway, Virginia 24067
PROJECT DESCRIPTION: Franklin County Public Schools has applied for a reissuance of a permit for public Callaway Elementary School WWTP. The applicant proposes to release treated sewage wastewater from a school at a rate of 1,900 gallons per day into a water body. Septage from the treatment process will be hauled to a local wastewater treatment plant. The facility proposes to release the treated sewage wastewater into the South Fork of the Blackwater River in Franklin County in the Upper Blackwater Watershed (VAW-L08R). A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: bacteria, organic matter, solids.
HOW TO COMMENT: DEQ accepts comments by e-mail, fax, or postal mail. All comments must be in writing and be received by DEQ during the comment period. The public also may request a public hearing.
HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax, or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for a public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor or those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.
CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS, AND ADDITIONAL INFORMATION: Becky L. France; Virginia Department of Environmental Quality, Blue Ridge Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019-2738; PHONE: (540) 562-6700; E-MAIL ADDRESS: becky.france@deq.virginia.gov; FAX: (540) 562-6725. The public may review the draft permit and application at the DEQ office named above by appointment or may request copies of the documents from the contact person listed above.

Douglas W. Domenech
Secretary of Natural Resources

David A. Johnson
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Division of Natural Heritage
217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951

MEMORANDUM

DATE: June 16, 2010

TO: Becky France, DEQ-NRO

FROM: Rene' Hypes, DCR-DNH

SUBJECT: DEQ VA0088561, Callaway Elementary School WWTP

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, natural heritage resources have not been documented in the project area. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

In addition, our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Shirl Dressler at (804) 367-6913.

Thank you for the opportunity to comment on this project.

Literature Cited

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Attachment I

EPA Review Checksheet

Revised 2/2003

State "FY2003 Transmittal Checklist" to Assist in Targeting Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Callaway Elementary School WWTP

NPDES Permit Number: VA0088561

Permit Writer Name: Becky L. France, DEQ-BRRO-Roanoke

Date: 4/9/2010

Major [ ] **Minor** [X] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?		X	
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?			X
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont. (FY2003)	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water? E. coli limit added to permit.	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?			X
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Checklist – for POTWs

(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X

II.D. Water Quality-Based Effluent Limits – cont. (FY2003)	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont. (FY2003)	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?			X
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

List of Standard Conditions – 40 CFR 122.41

Duty to comply
Duty to reapply
Need to halt or reduce activity not a defense
Duty to mitigate
Proper O & M
Permit actions
Property rights
Duty to provide information
Inspections and entry
Monitoring and records
Signatory requirement
Bypass
Upset
Reporting Requirements
Planned change
Anticipated noncompliance
Transfers
Monitoring reports
Compliance schedules
24-Hour reporting
Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?		X	

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?			
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?			

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?			
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?			
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?			
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?			
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?			
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?			
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ) – cont.	Yes	No	N/A
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?			
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?			

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?			
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?			
3. Does the fact sheet provide effluent characteristics for each outfall?			
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?			
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?			
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?			
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?			
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?			
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?			
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?			
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?			

II.E. Monitoring and Reporting Requirements (FY2003)	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?			
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?			
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?			

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?			
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?			
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?			

List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
Duty to mitigate	Monitoring and records	Transfers
Proper O & M	Signatory requirement	Monitoring reports
Permit actions	Bypass	Compliance schedules
	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?			

Part III. Signature Page (FY2003)

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Becky L. France
Title	Environmental Engineer Senior
Signature	Becky L France
Date	4/9/10